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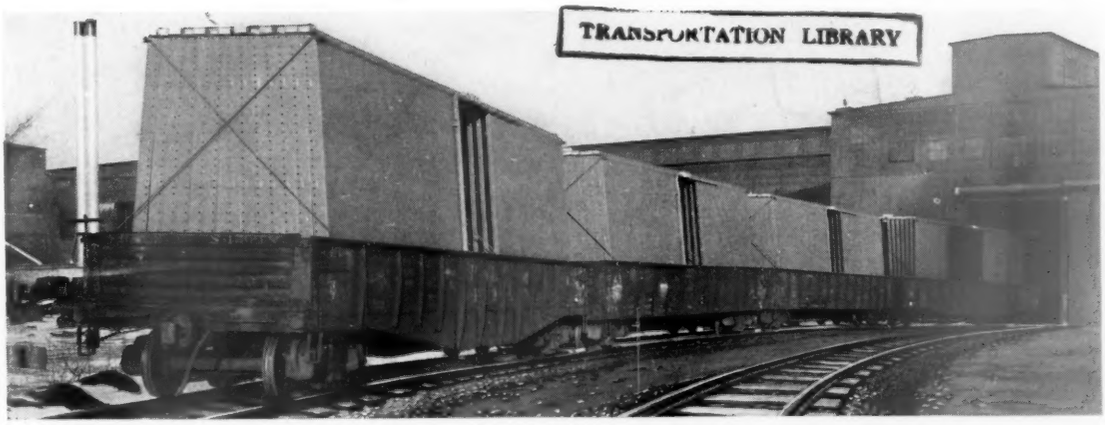

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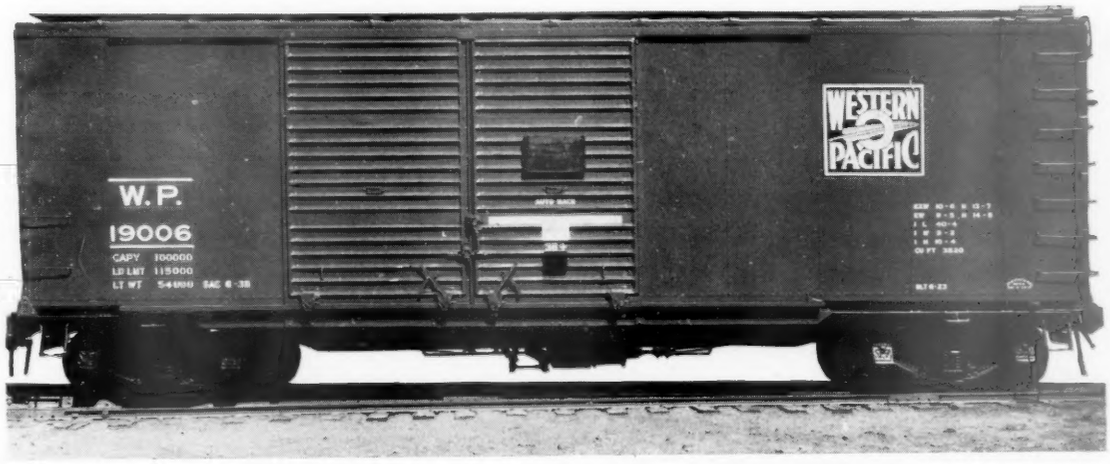

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The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

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The Week at a Glance

CARLOADINGS: In the June 26 week revenue cars loaded totaled 774 thousand, a gain of 8.4 per cent over a year ago and of 17 thousand cars over the preceding week.

●

COAL DECLINE: 30 years ago coal supplied 89 per cent of the mineral fuel energy consumed in the U. S., whereas today the proportion is only about 50 per cent—due to the inroads of other forms of energy-production. This fact was brought out in the presidential address at the annual meeting of the Society for Testing Materials in New York last week, reported elsewhere herein. In 38 years coal consumption per kilowatt-hour has declined from 7 lb. to less than 1½ lb.

●

SOCIALISM: The railroads are the "front line trench" of private enterprise, and if they succumb to socialization, all industry will be threatened with a similar fate—this is the theme of a recent appeal by Donald Conn of the Transportation Association of America to business executives in the effort to arouse them to see their personal interest in securing just treatment for the rail carriers. When regulation usurps the functions of management, he added, then the next logical step to be expected is outright government ownership.

●

JULY 4 TRAFFIC: New York railroads enjoyed an increase in passenger business over the July 4 week-end which, in some cases, reached really heavy proportions. The New York Central, for instance, had an increase of 30 per cent over last year, which in view of the fact that the reduced rates were in effect last year, gives some indication of the manner in which the traveling public is coming back to the railroads.

●

CORONATION EXPRESS: The London & North Eastern on Monday of this week inaugurated its new 6-hour London-Edinburgh train on its 392-mile run. The trains, drawn by streamlined steam locomotives of the "Silver Jubilee" type, are Britain's first attempt at sustained high speeds on such long-distance runs.

●

AIR TRAFFIC: The 20 air lines of the country in May flew 42 million passenger-miles, an increase of 5 per cent over a year ago. Percentage of passenger-miles to seat-miles flown, however, was only 59 per cent as against 69 per cent a year ago. Express traffic, however, increased sharply, totaling 342 million pound-miles, a rise of 34 per cent.

●

UNION "DEMOCRACY": Every member of a labor union should ask himself whether there is genuine "democracy" in his union. Is there a secret ballot so that he can express his opinion without fear of intimidation or reprisal? Does he know that the heavy dues he pays are honestly expended—and that they are not used for causes which he does not favor? Does he have a chance to vote directly, and secretly, for union officers, as he does for President of the United States; or are the officers chosen by convention delegates, subject to all the electioneering pressure of an old fashioned political convention? The unions in many instances have more power over a man and his opportunity to earn his daily bread than the government ever had. What value is there in democracy in government, the leading editorial herein asks, if the individual's right to work is in the hands of a virtually self-elected labor leader autocracy over which the membership has little or no control?

●

SANTA FE TRUCKS: The I.C.C. has refused permission to the Santa Fe's highway subsidiary to acquire a number of truck lines which serve territory already served by it—denial based on the commission's desire not to "restrain competition."

●

A.A.R. EXHIBIT AT N. Y.: The extensive panorama exhibit of the part the railroad plays in community life, first presented by the A.A.R. at the recent convention of mechanical and purchases and stores officers at Atlantic City, has now been set up at Pennsylvania station, New York, for public inspection. Later it will be shown at other large centers throughout the country.

●

STRIKE VOTE: The general chairmen of the 14 non-operating unions, meeting in Chicago on July 2, duplicated the action taken by the transportation brotherhoods a week earlier by adopting a resolution calling for the taking of a strike ballot on the wage increase demands which the unions have made to railway managements. It will be the first chance the members have had to indicate their views on the question, the demands so far having been made by the union chiefs solely on their own responsibility.

●

LOCO REPAIR COSTS: Costs of repairs throughout the life of an 18-year-old C. P. R. locomotive are presented and analyzed in an article herein, which shows cost per mile between general repairs at their minimum during first four years and at their maximum in 13th and 14th years. The article concludes that "the infiltration of modern power, where needed, is economically desirable, especially at a period of recovery in traffic."

●

DROUGHT: A reminder of disastrous droughts of recent years comes in the distress live stock rates just allowed by the I.C.C. for drought areas in Montana and North Dakota. Fortunately for general business, extraordinary expenses due to weather conditions this year are taking the form of wash-out repairs. A president of one of the Western roads says he will never complain at another wash-out expense as long as he railroads, after what he has seen the country and his railroad suffer from absence of rainfall in recent years.

S. A. L. TRUCK PLANS: Southeastern highway truckers are up in arms at the Seaboard's plan to improve its service by co-ordinating rail and highway operations and insist that the I.C.C. deny the railway permission thus to improve its service. Actually the railroad plans no competitive truck service at all, seeking rather to use the trucks only to consolidate l.c.l. traffic at key stations—and practically all the freight handled by its trucks would get the major part of its movement by rail.

●

KANSAS HARVEST: A railroader (in train service) in Kansas writes us that for the first time in 10 years he cannot get permission to lay off. All furloughed men on the division are back at work, several crews have been borrowed from other divisions and new men have been hired—wheat movement being the cause of the rush. A good crop sold at a good price will do great things for everybody in that country—railroads and railroaders included.

●

ALLEGHANY: The Alleghany Corporation and the Chesapeake Corporation, Van Sweringen holding companies, are to be merged into a new company known as Chesapeake Corporation (without *the* before it), it was announced in New York Thursday by the triumvirate of financiers who hold the dominant interest in railroad property formerly controlled by the Van Sweringens.

●

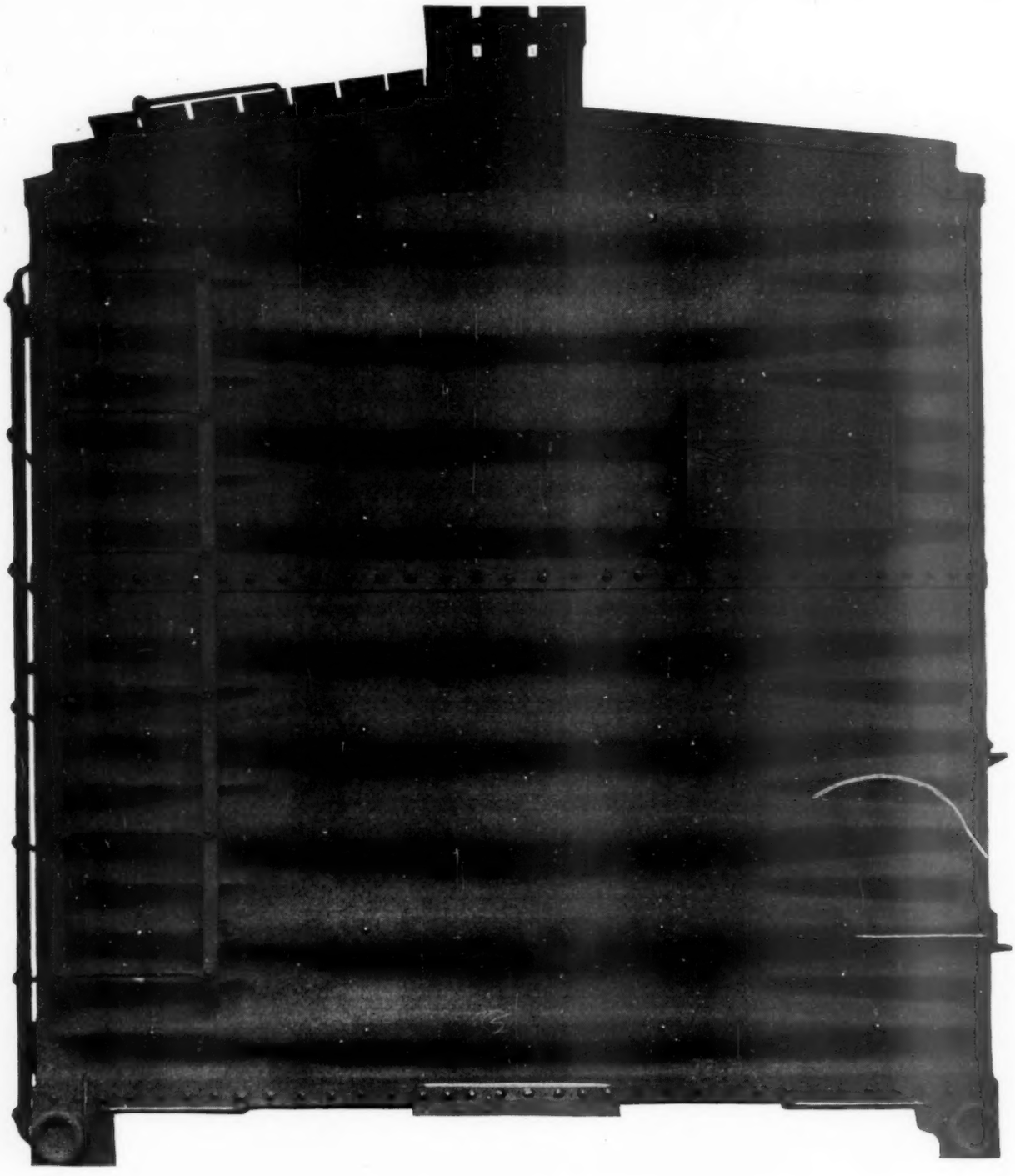
SHORT ENGINE RUNS: Reversing the general trend toward longer engine runs, the Florida East Coast has demonstrated the possibility of getting favorable mileage performance out of its power by running its engines on short daily turnarounds. The plan, which is outlined in an article herein, rests upon all work on a given locomotive being done in one engine-house, and usually by the same repair crew; engine crews also usually get the same engine day after day, encouraging their interest in its maintenance.

●

EQUIPMENT: The equipment market continued quiet this week—but the total of orders placed in the first six months, which are summarized in an editorial herein, shows a healthy volume of business on the manufacturers' books—228 locomotives, 45,090 freight cars and 456 passenger cars having been ordered in the half-year period.

●

PORK BARREL: The House of Representatives this week approved some 120 waterway projects which will cost the taxpayers 30 million dollars, and will give the statesmen something to boast about to their constituents when the next campaign comes along. The bill gave occasion for a lot of railroad-baiting oratory; and a leader among the lot was a Republican—Culkin of New York—who not only rapped the railroads, but let the I.C.C. have a few on the nose as well. This staunch defender of the people believes the House "went back half a century" when it passed the Pettengill bill.



WHEN THE DRAFT GEAR STOPS

THE DREADNAUGHT END STARTS

YIELDING UNDER EXTREME IMPACTS ONE FOOT
AS A CUSHION AGAINST THE SLIDING LOAD

RAILWAY AGE

The Irresponsibility of Labor Unions

The independent steel companies, by their refusal to sign "contracts" with John Lewis' C. I. O., have rendered one great public service. This is the service of making clear to a large part of the public the real issues raised by the present radical labor movement in the United States.

They have based their refusal to sign so-called "contracts" largely upon the ground that the C. I. O. is irresponsible. On legal grounds there seems no warrant for the demand of C. I. O. for signed "contracts." The Supreme Court, in its opinions upholding the Wagner Act, held that the employer must engage in collective bargaining with duly elected representatives of his employees; but it also expressly held that the law does not require the bargaining to result in agreement. Obviously nothing could be incorporated in a "contract" excepting the terms of an agreement; and as an agreement is not required, it follows that a "contract" is not. Furthermore, if precedents established by past decisions of the courts still mean anything, no law would be upheld by them which required an employer to make a contract with any labor union as long as all labor unions are as irresponsible as they are now.

A labor organization may be "irresponsible" either in the sense that no agreement or "contract" is legally enforceable against it and its members, or in the sense that it cannot be relied upon to carry out its agreements. Probably no labor union in this country can now be said to be responsible in a legal sense. On the other hand, there are many that can be said to be responsible in the sense that they can be relied upon to carry out their agreements. This is notably true of the railway labor unions. Their leaders try constantly to get their agreements with the railways interpreted as favorably as possible to their members; but it is rarely there is any complaint of the railway unions violating their contracts.

Who Elected John Lewis?

An attempt is being made, however, to change very radically the situation as respects the organization of labor. Heretofore only a small percentage of the total employees of transportation and industry have belonged to national labor unions. The attempt now being made to get all of them into national unions would give labor unions and their leaders a power vastly exceeding what they have had in the past. To allow national labor unions to remain legally irresponsible after they included most of the wage-earning population would be a very different matter from having allowed them to be legally irresponsible when they have included only a small proportion of the country's wage-earners.

The present irresponsibility of labor unions begins with the election of their officers. John Lewis, as head of the C. I. O., is today one of the most powerful men in the country. Who elected him head of C. I. O.? Not its members, because the Committee for Industrial Organization had extremely few members when it was formed. Mr. Lewis virtually elected himself. But as a labor leader he is not, in this respect, entirely unique. Who knows whether the officers of any other labor union are the choice of its members? Most officers of our national, state and local governments are elected by the legally qualified voters by secret ballot. The officers of corporations are elected by their directors, and the directors by their stockholders, in ways prescribed in detail by law. There are no statutes regulating the election of officers of labor unions, no government supervision or investigations to determine whether those purporting to be their officers actually ever were elected.

Who Authorizes Strikes?

Every business corporation is required by government to keep adequate and honest accounts and records and to make reports of its earnings and expenditures to its stockholders and to government authorities. The directors and officers of such corporations are civilly and criminally liable for misuse of their funds. Corporations are prohibited from contributing to political funds. National labor unions collect large amounts in

dues from their members. Some of them have and C. I. O. demands the "check-off" system under which the employer takes dues from the employee's wages and pays them to the union. But the unions and their officers are subject to none of the requirements imposed on corporations and their officers regarding accounting and the reporting of receipts and expenditures. They are free to contribute whatever they choose to political funds. A corporation can be proceeded against for damages for violating a contract, but there is apparently now no legal way financially to penalize a labor union or its members for failure to carry out a contract.

A strike by a labor union may be a matter of great importance to a community or numerous communities, large or small. A national strike by a labor union may be a matter of national importance. But there is no law requiring that before a strike is ordered a majority of the members of a union shall vote for it, or for a secret ballot enabling each member to express himself without duress when a vote is taken, or for making sure that the vote is correctly counted and reported. In actual practice the decision whether there shall be a strike is usually made by union officers without there being available any evidence that they ever have been properly elected or that they have been authorized by the members of the union to order them to quit work.

Political Encouragement of Unionization

The railway labor unions are among the responsible —or least irresponsible—in the country, and yet almost every statement made above is as true of them as of other unions, whether old or new. The leaders of all these unions but two committed them in favor of such a vitally important policy as government ownership and began using their funds to promote it without having ever consulted the members about it. And yet labor unions claim to be "democratic" themselves, and to favor "democracy" in industry as well as government!

The government of the United States is strongly encouraging and aiding the unionization of labor. The governments of several of the most important states also are. The governor of Michigan openly aided C. I. O. in his state. The governors of both Pennsylvania and Ohio recently called out troops to help close steel mills in those states in aid of C. I. O. Subsequently when the governor of Ohio reversed himself and ordered the troops to protect men desiring to work in the steel mills, he publicly charged Secretary of Labor Perkins with having asked him virtually to kidnap the heads of the steel companies and hold them prisoners until they would sign "contracts" with C. I. O.

Whether men in high public office should encourage unionization is one question. Whether they should promote the creation of powerful labor unions by discriminating in the enforcement or non-enforcement of the laws for maintaining peace and order between employers and strikers, and between men who wish to work and men who do not, is an entirely different question. They violate their oaths of office and invite anarchy when they fail to enforce the laws equally against all breaking or threatening to break them.

Autocratic Advocates of "Democracy"

Furthermore, they subject the nation to most serious danger when they encourage the unionization of millions of men while promoting no legislation to impose upon powerful labor unions and their officers legal duties and responsibilities corresponding with those legally imposed upon large corporations and their officers. The employees of industry have as much right to organize and bargain collectively as the stockholders of industry. But public safety, from the standpoints of both order and economics, requires that when thousands, hundreds of thousands, and even millions of men are organized into labor unions they shall be required to incorporate and be subjected in regard to the election of their officers, the collection and use of their funds, their strike votes and all their activities to regulation and control which will insure that their activities will be in accord with the wishes of their members and not destructive of the public welfare.

Powerful organizations the leaders of which profess so loudly to be in favor of what they call "democracy" in industry as well as in government surely should, in a democratic country, be required by government to be democratic in the conduct of their own affairs. The plain fact is that, in the conduct of their own affairs, labor unions are the least democratic and the most autocratic organizations in this country, and threaten, because of this plain fact, to become the greatest menace to democracy in both industry and government. There never was more consummate hypocrisy than most labor leaders' professed devotion to "democracy."

All Citizens Have Same "Rights" as Labor

In taking a stand that they will not sign "contracts" with irresponsible unions the independent steel companies have forcibly called public attention to the respects in which labor unions in this country are irresponsible and to what should be done to make them responsible if they are in future to become as numerically important as their more or less self-constituted leaders and their political supporters are trying to make them. They should be required to incorporate and they, their officers and members to assume duties and responsibilities similar to those of other corporations, their officers and stockholders. And that includes liability in civil and criminal proceedings for failure to carry out their contracts or other violations of law.

Some say that "labor" now has to use extra-legal or illegal methods to get its "rights." If that is so, the laws and their interpretation and enforcement should be changed. But there are many millions more in this country who work than are included in the class called "labor"; and the farmers, small business men and

other millions not eligible to membership in labor unions have the same "rights" as "labor" and will not long tolerate the use by labor leaders, whether self-constituted or elected, of C. I. O. methods that completely disregard their rights.

Six Months' Orders Promise Big Year

Domestic equipment orders as recorded in the June and July 3 issues of *Railway Age*—namely, 22 locomotives, 528 freight cars and 10 passenger-train cars—bring totals for the first six months of 1937 to 228 locomotives, 45,090 freight and 456 passenger-train cars. These figures exceed the entire 12 months' totals for 1931 to 1935, inclusive, in all three categories of equipment, and in the case of passenger-train cars, the year record of 1936 as well. The single rail order for 10,000 tons placed in June carries purchases for the first half of 1937 to 65,017 tons.

The carriers ordered 22 locomotives in June—12 steam, 4 Diesel-electric and 6 electric. Of these, 11 will be built in company shops. While this figure falls short of locomotive purchases in June of last year by two, it does signify more activity in this year's field than the 14 units placed on order in May, and, as has been stated, this year, just half completed, has seen the purchase of 228 units, a figure substantially higher than each of the entire years since 1930, excluding 1936. There are also inquiries outstanding or purchases proposed for 5 steam and 13 Diesel-electric locomotives. The 1937 export market in locomotives was given considerable impetus by an order from the Chinese Ministry of Railways in June for 20 units, following the purchase of 18 locomotives in April by the National Railways of Mexico. The six months' total of 41 locomotives for export exceeds by 13 the greatest of the 12-month totals for each of the years 1930 to 1936, inclusive. The two orders of 30 and 20 locomotives each from Canadian builders, which constitute the Dominion's 1937 record, surpass in volume the total of 31 purchased in all years since 1930, added together.

June orders for 528 freight cars are far below the 4,320 cars ordered in the corresponding month of 1936, and, unlike passenger-train car and locomotive orders, compare unfavorably with the May figure of this year, 3,903. Nevertheless, heavy requisitions by the carriers in earlier months of the year have pushed the freight car record for the first half of 1937 to a point higher than each of the entire years of 1931 to 1935, inclusive, and only 1,270 cars below the 1930 total. Furthermore, this record is over 60 per cent higher than the 26,560 cars ordered during the corresponding six months' period of 1936. Comparison with the records of the pre-depression years 1926 to 1928, inclusive, shows that at the midway point of 1937, freight car orders have already reached a mark that is approximately 85 per cent of the entire 12 months' total of 1928, and about 67 per cent and 62 per cent of the year totals of 1926 and 1927, respectively. In addition, on July 3, there were contemplated purchases of 1,765 cars. Trading in foreign markets brought a total of 1,050 orders for freight cars to American builders during the six months just passed, and in the same period Canadian builders received contracts for 7,358 cars.

It is in the passenger-train car field that 1937 shows the greatest gains in equipment buying over previous years, its 456 cars surpassing the 12 months' totals of 1931 to 1936, inclusive, and being approximately 68 per cent of the 1930 total. Comparison with the orders for 147 cars placed during the corresponding half of last year reveals an increase in volume of more than 300 per cent. There was no export activity in passenger-train cars during 1937, while in Canada a total of 90 units (including 10 mail and express cars) were ordered, which is more than twice the number of cars ordered in all of the years 1931 to 1936 taken together.

June rail orders of 10,000 tons bring the six months' total to 65,017 tons. This represents a heavy falling off from the 468,485 tons ordered during the first six months of 1936, and is considerably below the six months' record of any of the depression years.

It's Up To Labor

Over the Fourth of July week-end the teamsters of Philadelphia and environs suddenly imposed partial paralysis on a community of three million people. The issue was not one of better wages, hours or working conditions. It was one of whether the A. F. of L. or the C. I. O. should control bakery drivers. . . .

Contracts were violated. Industry for the time being stopped. That Mayor Wilson was able to force an agreement by a ballot which should determine who should win was fortunate, but incidental to the larger prospect of similar affairs developing throughout the nation. . . .

With labor organization split as it is, a rash of like occurrences seems probable as the "next phase." And because of the seriousness of the prospect we hear Miss Perkins belatedly deploring the sitdown strike, President Roosevelt putting the curse on "both your houses," Secretary Roper appealing for order, Governor Earle urging inviolability of contracts. . . .

In the present scene labor is at the cross-roads. It is now a matter of self-control. If, after all that has already happened, jurisdictional strikes between the A. F. of L. and the C. I. O. are to spread, then labor unionism may be of a "few days and full of trouble."

If, on the other hand, labor can get together, function under the guarantees of the Wagner act, bargain collectively, reach agreements and then keep them, the greatest forward stride in the history of our complex and fast-moving civilization toward a better distribution of wealth and a better general economy will have been taken.

It is up to labor.

—From the New York World-Telegram.

Seaboard Utilizes Spring Switches

A Spring Switch Was Installed at the North End of Each Siding

A New Block Office, Complete with Manually Operated Signal

Installations at the north end of each of 12 passing sidings on 106 miles of single-track line between Hamlet, N. C., and Columbia, S. C., expedite 12 train meets during 6 hours at night

FOR the purpose of reducing the train delays and the number of train stops when making meets on 106 miles of single-track line between Hamlet, N. C., and Columbia, S. C., the Seaboard Air Line has installed spring switches at the north end of 12 passing tracks and established manual block offices at the south ends of these sidings. On its main route between Richmond, Va., and points in Florida, the Seaboard has one main line between Richmond and Hamlet, 254 miles, and between Savannah, Ga., and Jacksonville, Fla., 139 miles, with various routes south to Miami, Fla., and Tampa. On the section between Hamlet and Savannah the road has two separate lines, one via Columbia, S. C., 247 miles long, over which through passenger trains and some freight trains are operated, and a second line via Charleston, S. C., 263 miles long, over which through freight trains are operated. When the signaling program was under way automatic blocks were installed between Richmond and Hamlet, and between Savannah and Jacksonville, but signals were not installed on either of the lines between Hamlet and Savannah.

Trains Bunched at Night

As traffic increased a special operating problem arose on the Hamlet to Columbia section because, in train time, this section lies about midway between New York and points in Florida, with the result that the majority of the fast through passenger trains meet in this territory. During the winter season the schedule includes, in each direction, the Southern States Special, the New York-Florida Special, two sections of the Orange Blossom Special, a local passenger trains and a freight train. In addition, during the fertilizer season, from February to April, a switching train is operated over the 27 miles between McBee, S. C., and Camden, 47 and 73 miles south of Hamlet, respectively. Thus the total daily scheduled traffic includes 10 passenger trains and 2 freights, in addition to the switching train. Extra sections of the through passenger trains are operated at the peak of the season so that the total number of trains daily reaches a maximum of 18 to 20.

The real difficulty in train operation, however, was that all of the scheduled trains, with the exception of the southbound local passenger train, are operated over this 106.3 miles of single track during the night, 13 trains being handled over the subdivision between 7 p. m. and 6:05 a. m. Furthermore, the trains are so bunched that the four through passenger trains in each direction are operated between 10:57 p. m. and 5:05 a. m., at which time the two through freight trains have about half of their runs to complete. The schedule calls for 12 meets between 10:05 p. m. and 3:12 a. m. During certain parts of this period of 5 hours 7 minutes a total of 10 trains are in operation on the subdivision.

Track Layout

The line between Hamlet and Columbia passes through a country of low hills, so that the line encounters numerous curves and short rolling or momentum grades, none of which affect the tonnage rating of the trains operated

regularly. Passing tracks with capacities of 58 to 60 cars are located at 17 places, and at Middendorf the siding was lengthened to hold 100 cars. During the summer when traffic is reduced trains are operated by time table and train orders, but during the heavy traffic winter season from December 10 to April 25 movements are directed by absolute and permissive manual block, using absolute manual block in all moves involving passenger trains. As there are only two freights, this results in absolute block for practically all movements.

During the first and second tricks each day the traffic is light, the number of meets being so few that no serious delays are occasioned by having the trainmen handle the passing track switches. However, during the third trick, as explained previously, the meets were so numerous that it was evident that the operation of trains could be improved decidedly if these delays could be reduced to a minimum. It was further evident that if the block office were located at one of the switches of a passing track rather than at the station, meet orders effective at such a location, could be issued up to within a short time before the arrival of trains.

Therefore, it was decided that block offices should be established at the south ends of certain passing tracks, and that during the third trick only the operator should be on duty at this new office instead of at the station. With this arrangement the operator would be at the proper location to operate the manual-block signal and handle train orders and also to throw the switch to head trains into the passing track.

The next point considered was a means of operating the other switch of the passing track so that most trains would not need to stop when leaving the siding. This was a logical location for a spring switch and, in view of the fact that spring switches with facing-point locks had been in successful use on the Seaboard since 1931, it was decided that the use of such equipment represented safe practice. As a result, the use of spring switches at one end of each siding, in combination with a block office at the other end, was approved.

Location of Installations

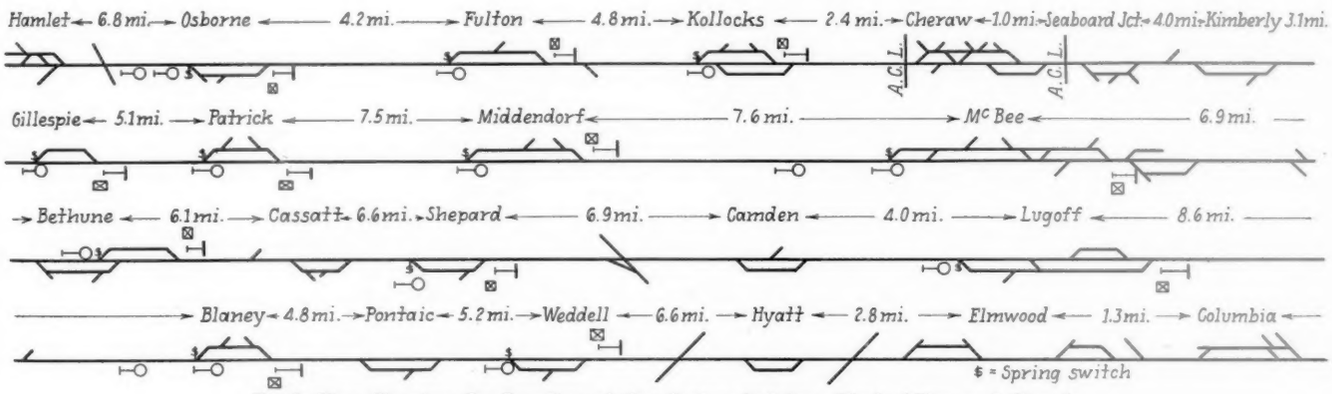
In choosing the passing tracks to be so equipped, the locations at which meets occurred most frequently were listed first, and then a station on each side was listed in order to provide flexibility in case trains were off schedule. Thus the spring switch-block office installations are located in groups of three, as is evident from the track diagram.

At the majority of the locations chosen the grades on the passing tracks are favorable to a train headed northward. Therefore it was decided in order to have the layouts uniform that in all cases the block office should be at the south switch and the spring switch at the north end. At the south switch of each of the 12 passing tracks a small frame building was constructed to serve as an office, and a standard two-arm mechanical block signal was erected. In all instances the office is located on the side of the track opposite the switch stand so as to conform with Seaboard Air Line rule 104-B, which reads: "When a trainman changes a switch to let an engine or train into or out of a track he will immediately cross over to the opposite side of the track from the switch stand. On double track he will take a position not less than 20 feet from the switch."

The No. 10 turnouts at the south end of each siding were left in service. At the north end of each of these passing tracks the No. 10 turnout was replaced with a No. 16, to permit the trains to pull out at speeds up to 25 m. p. h. At these locations the entire switch layout was rebuilt, including the installation of the spring switch and locking arrangement. The stand, including the mechanical facing-point lock device, is the Union Switch & Signal Company's type S-2, and the spring and oil buffer unit, which is applied as a part of the throw rod, is the Pettibone Mulliken Company's style.

Sign and Signal Protection

Since the installation of these spring switches the Seaboard has adopted the recommended standard sign A. A. R. 1613-A, which is a circular disk 15 inches in diameter and bears the letters "SS" in black on a white background. This sign will be attached to the signal mast immediately in advance of the spring switch or on a post adjacent to the spring switch. The installations described above, as well as all future installations of spring switches, will be equipped with this standard sign.


Hamlet 6.8 mi. Osborne 4.2 mi. Fulton 4.8 mi. Kollocks 2.4 mi. Cheraw 1.0 mi. Seaboard Jct. 4.0 mi. Kimberly 3.1 mi.
A.C.L.
A.C.L.
Gillespie 5.1 mi. Patrick 7.5 mi. Middendorf 7.6 mi. Mc Bee 6.9 mi.
Bethune 6.1 mi. Cassatt 6.6 mi. Shepard 6.9 mi. Camden 4.0 mi. Lugoff 8.6 mi.
Blaney 4.8 mi. Pontiac 5.2 mi. Weddell 6.6 mi. Hyatt 2.8 mi. Elmwood 1.3 mi. Columbia
$ = Spring switch

Track Plan Showing the Location of the Spring Switches, Block Office and Signals

As no automatic block signals are in service on this subdivision, it was decided that the normally-closed position of the switch points and the lock plungers should be indicated by high signals. Therefore, a regular color-light signal was installed at the right of the track in the approach to the facing points, the signal being approximately a half rail length from each switch.

Although the head is the same as a regular signal, these signals are in reality switch-position indicators. The control circuits for each signal check the normally-closed position of the switch within ¼ inch, and not only check that the lock plunger is in proper position, but also check over- or under-throw of the plunger so as to maintain a check on the correct operation for trailing moves

through the switch. As long as the conditions are correct, the control is set up for the signal to display a green aspect. If the switch points or the lock plunger are not in the proper position the green light is extinguished and the red aspect is displayed in the main unit, and, in addition, two bracket lights, one on each side of the mast, are illuminated to show lunar white, thus completing the "stop" aspect for a spring switch signal. On encountering such an aspect a train is stopped short of the indicator and an inspection is made of the switch.

At all but three of the layouts the track is practically tangent on the approach to the switches so that an engineman can see the aspect more than braking distance away. At three locations, however, curves in the track prevent proper sighting distance. Therefore at each of these three layouts a distant signal of the color-light type was installed. These distant signals are located from 2,379 feet to 3,600 feet in approach to their respective home signals. When a home switch-position signal displays green, its respective distant signal also displays green, but when the home displays red, the distant signal displays yellow. The signals are controlled for approach lighting so that they are not illuminated except when a train occupies the track circuits in approach thereto. They do not check block occupancy ahead.

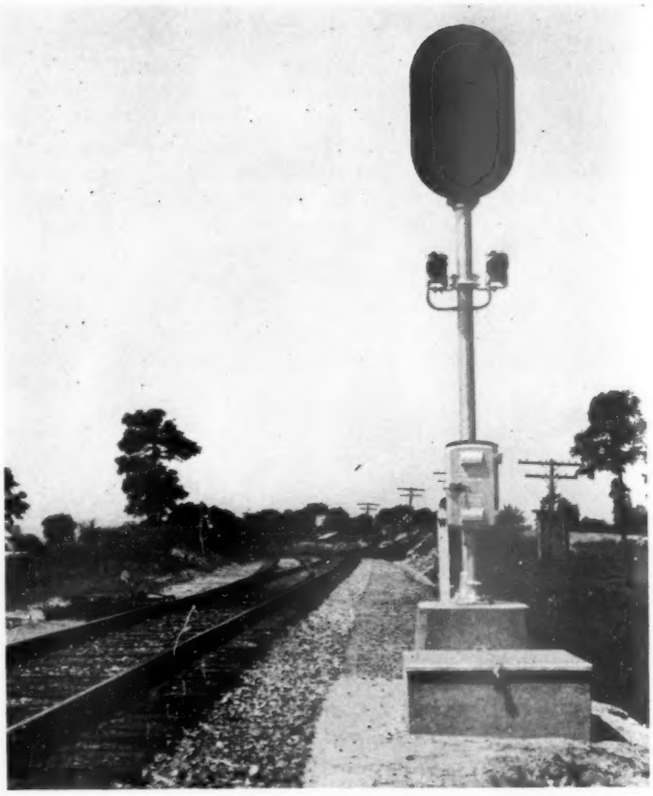
In addition to affording information to an engineman of a southbound train to the effect that the switch is in proper position and locked for a main line through movement over the switch in the facing-point direction, the signals are also observed by trainmen on northbound trains, so that any improper condition of a spring switch can be detected and corrected as soon as possible. For example, after a northbound train pulls out of a passing track onto the main line the conductor or a trainman must look to see that the home switch signal displays the green aspect, thus checking the fact that the switch has closed and been locked. If the green aspect does not appear, the fact is reported at the next open office.

Thus these signals perform a function similar to that of switch targets and lamps, except that the check as to the position of the switch is much more accurate with the signals than with a target operated by the ordinary stand. All of these facts are explained in the instructions to trainmen, with warnings that these signals are controlled only by the position of the switches and are not to be accepted in any way as a manual block or as an automatic signal controlled by track circuits and indicating block occupancy ahead. The switch-position signals and control equipment were furnished by the Union Switch & Signal Company, and are operated from primary battery provided by Thomas A. Edison, Inc.

Method of Train Operation

During the first and second tricks each day the operators are on duty at the regular stations, and, for the few trains operated, the trainmen operate the switch stands by hand when using the passing tracks, except that northbound trains can, of course, pull out of the sidings through the spring switches without stopping. During the third trick the operators are on duty at the new block offices at the south switch of each of the respective 12 locations. The tour of duty at the new offices varies somewhat from the regular third trick hours, 10 p.m. to 6 a.m., certain differences being made to adapt the hours to meet the time of maximum train movements. At one location the operators are on duty from 4 p.m. to 8 a.m., but in the majority of instances the new offices are in service from 8:30 p.m. until 4:30 a.m.

In addition to the open block offices at these 12 locations, offices are open continuously at two other intermediate points, Seaboard Junction and Camden, and counting the offices at the two terminals, Hamlet and Columbia, there is a total of 16 continuously open offices on the subdivision. Telephone train dispatching equipment is in service for issuing train orders and for the interchange of information regarding the location of trains. Booths with telephones connected to the dispatcher's line are located at 21 places where they can be used by train crews.



Each Switch Position Indicator Signal Has Two Lunar White Markers

It is the rule that the meets are to be established ahead of time by train order. The instructions and rules set forth that a northbound train holding an order to take siding is to approach the block office under control, and the engineman is to call for the signal (S.A. L. Rule 14-J) and stop unless the switch is reversed, the track is clear into the siding, and he receives a proceed hand-signal from the operator (S.A.L. Rule 12-C). The train speed through the No. 10 turnout is limited to 10 m.p.h. In the meantime, when an engineman of a northbound train calls for a signal the operator, holding a copy of a meeting or passing-point middle-order, will throw the switch for the siding by means of the hand-throw stand, see that the switch points fit properly, cross to the opposite side of the track and give the engineman the proper proceed hand-signal (S.A.L. Rule 12-C). When the train is in the clear on the passing track, the operator restores the switch to the normal position. After the southbound train to be met has passed, the northbound train on the siding can pull out through the spring switch at the north end without stopping, the speed over the No. 16 turnout and trailing through the spring switch being limited to 25 m.p.h.

With this method of operation, including no train stops to operate hand-throw switches, a meet can be handled in a very short time. Furthermore, in view of the fact that a train can depart from, as well as enter,

(*Continued on page 43*)

Materials in the Spotlight

Fortieth annual convention of the American Society for Testing Materials, with a record attendance, advances the status of many subjects

MEETING in New York City for the first time in 25 years, with a crowded program of technical reports and papers, a record attendance, and the largest exhibit of testing equipment and related apparatus ever held under its auspices, the American Society for Testing Materials had a most successful convention from June 28 to July 2, inclusive. Altogether, more than 1,525 members and guests assembled to report on and to adopt standards and specifications for materials and methods of testing, and to discuss technical subjects of interest to both producers and consumers. The attendance this year compares with an attendance of 1,131 at Atlantic City, N. J., in 1936, and the previous record attendance of 1,451 at the Thirty-fourth annual meeting in Chicago, in 1931.

During the five-day program there were 19 general sessions at which papers and reports were presented. Some of the subjects of special interest to the railway industry included those having to do with steel, wrought and cast iron, certain non-ferrous metals, corrosion, cement and concrete, timber and water. The general sessions were supplemented by more than 200 meetings of individual committees and special groups in the interest of their particular assignments or work, and by the exhibit of testing and related equipment presented by 57 instrument makers and other interested groups, including several committees of the society. All of the principal activities of the annual meeting, including the equipment exhibit, were held at the Waldorf-Astoria hotel.

The meeting was conducted under the direction of Arno C. Fieldner, president of the society, and chief, technologic branch, U. S. Bureau of Mines, assisted by C. L. Warwick, secretary-treasurer, and those who presided over the special meetings and sessions. As a result of the action taken, 53 new tentative specifications were accepted for publication as tentative and 22 existing tentative specifications and tests were approved for reference to society letter ballot for formal adoption as standard. In addition, many revisions were approved in existing standards and tentative standards.

In the election of officers for the ensuing year, A. E. White, professor of metallurgical engineering, and director of the department of engineering research, University of Michigan, was advanced to president, and H. H. Morgan, manager, Rail and Track Fastenings department, Robert W. Hunt Company, was elected vice-president. Atlantic City was selected for the annual meeting in 1938, which will be held June 27 to July 1.

Many Phases of Fuels Discussed

In his address, President Fieldner, speaking on "Fuels of Today and Tomorrow," reviewed the changing conditions of the fuel supply and demand in the United States during the last 30 years, and then discussed the probable fuels and fuel supply of the future. He pointed out that whereas 30 years ago coal furnished 89 per cent of the mineral fuel energy of the United States, it furnishes only approximately one-half today as the result of the inroads made by water power, petroleum and natural gas. From the standpoint of efficient utilization of coal, he said, however, as compared with an average consumption of 7.05 lb. of coal per kilowatt-hour in 1899, and 3.2 lb. in 1919, the consumption of coal per kilowatt hour in 1936 was only 1.44 lb.

Speaking of fuels of the future, Mr. Fieldner expressed the opinion that coal will continue to be the principal fuel for the generation of public-utility and industrial power, and that while technologic improvements and new hydroelectric power will tend to reduce the consumption of coal, increased demand for energy and a decreasing supply of cheap residual oil will increase the amount of coal consumed for power purposes.

In addition to the president's remarks on fuel, coal and allied products were the subject of a number of committee reports and papers. Of special interest were the reports of the committees on Coal and Coke, and on the Classification of Coals, and papers presented on the Significance of Friability and Size Stability Tests on Coal, and the Significance to the Consumer of Sulfur in Coal.

Steel and Steel Products

Steel, wrought iron, cast iron and special alloys were the subject of many reports and papers. The Committee on Steel, of which H. H. Morgan is chairman, proposed seven new tentative standards and the adoption as standard of six existing tentative specifications, all of which were acted upon favorably. In addition, it reported approval by the society during the year of four tentative specifications, and the adoption of four A.S.T.M. standards by the American Standards Association. A partial list of the various specifications affected follows:

New Tentative Specifications

Seamless Cold-Drawn Intermediate Alloy-Steel Heat-Exchanger and Condenser Tubes

Carbon-Silicon-Steel Plates of Ordinary Tensile Ranges for Fusion-Welded Boilers and Other Pressure Vessels

Chrome-Manganese-Silicon (CMS) Alloy-Steel Plates for Boilers and Other Pressure Vessels

Low-Carbon-Nickel Steel Plates for Boilers and Other Pressure Vessels

Molybdenum-Steel Plates for Boilers and Other Pressure Vessels, and

Iron and Steel Filler Metal (Arc-Welding Electrodes and Gas-Welding Rods).

Adoption of Tentative Standards as Standards

Fabricated Steel Bar or Rod Mats for Concrete Reinforcement (A 184-36 T)

Welded Steel Wire Fabric for Concrete Reinforcement (A 185-36 T)

Forged or Rolled Steel Pipe Flanges for General Service (A 181-35 T)

Electric-Resistance-Welded Steel and Open-Hearth Iron Boiler Tubes (A 178-35 T), and

Seamless Cold-Drawn Steel Heat-Exchanger and Condenser Tubes (A 179-35 T)

Tentative Standards Approved During Year

Seamless Steel Boiler Tubes for High-Pressure Service (A 192-36 T)

Alloy-Steel Bolting Materials for High Pressure and Temperatures up to 1100 F. (A 193-36 T)

Nuts Used in Bolting for High-Pressure Service at Temperatures up to 1100 F. (A 194-36 T), and

High-Strength Structural Rivet Steel (A 195-36 T).

A.S.T.M. Standards Approved by A.S.A.

Specifications for Steel for Bridges (A 7-36)
Specifications for Steel for Buildings (A 9-36)
Specifications for Mild Steel Plates (A 10-36), and
Specifications for Structural Rivet Steel (A 141-36).

In addition to the action recommended on the foregoing specifications, the committee recommended withdrawal of the List of Specifications for Steels Suitable for Fusion Welding (A 151-35), and certain revisions in the three following standards, all of which were approved.

A.S.T.M. Standards Revised

Structural Rivet Steel (A 141-36)

High Tensile Strength Carbon-Steel Plates for Pressure Vessels (Plates 2 in. and Under in Thickness) (A 149-36), and

High Tensile Strength Carbon-Steel Plates for Fusion-Welded Pressure Vessels (Plates 2 in. to 4 in., Inclusive, in Thickness) (A 150-36).

Other Ferrous and Non-Ferrous Metals

Many recommendations affecting standards and tentative standards were made by the committees on Wrought Iron, Cast Iron, and Non-Ferrous Metals. The Committee on Wrought Iron proposed no new standards, but recommended a number of revisions in the standard specifications for iron and steel chain; welded wrought iron pipe; solid staybolt wrought iron; hollow rolled staybolt iron; and uncoated and zinc-coated wrought iron sheets. Revisions were also recommended in the tentative specifications for wrought iron plates; wrought iron rivet rounds, and single and double-refined wrought iron bars. All of these recommendations were approved.

In a progress report, the Committee on Cast Iron announced that it is undertaking complete revision of the tentative specifications for chilled-tread cast iron wheels in order to bring them into close agreement with the specifications for car wheels developed by the Association of American Railroads. Progress was also reported by the Committee on Iron-Chromium, Iron-Chromium-Nickel and Related Alloys. This committee has jurisdiction over all matters pertaining to those iron-base alloys termed "stainless" or "rustless" whose primary characteristic is resistance to corrosive attack or elevated temperatures, or both. Another report submitted under the head of metals was that of the Research Committee on the Yield Point of Structural Steel. This report, after discussing the significance of the yield point to the engineer, the range in the yield point when material is furnished under specifications, and proper testing procedure, offered a summary of the committee's work in this regard and a number of recommendations.

Under the subject of non-ferrous metals, the reports presented containing features of direct or indirect interest to the railways included those on light metals and alloys, cast and wrought; copper and copper alloys, cast and wrought; and copper and copper alloy wires for electrical conductors. Other reports of interest relating to metals dealt with the fatigue of metals, and the corrosion of iron and steel and non-ferrous metals. In the report on the fatigue of metals, the committee said that it had given consideration to fatigue failures resulting from repeated highly localized compressive stress, such as the condition which exists between a car wheel and a rail. Such failures, it pointed out, include the "shelling" of the treads of car wheels, and internal fissures in rails.

The Committee on Corrosion of Iron and Steel reported on the various exposure tests being conducted under its direction; offered several revisions in the present tentative specifications for zinc-coated (galvanized) iron or steel farm-field and railroad right-of-way wire, and for zinc-coated (galvanized) iron and steel barbed wire; and presented a complete report on the field tests which it is conducting on wire.

Cement, Concrete and Other Materials

Along with metals and metal products, cement, concrete and other masonry materials received a large amount of attention. Of particular interest to the large users of cement is the new tentative specification presented for blended cements, which was referred back to the committee for further consideration, and several phases of the report on portland cement having to do with physical and chemical tests, which were adopted. The committee reported that it plans to undertake the study of the effect of additions to cement, such as are made to produce high-early-strength cements, to find whether any of these additions are harmful.

The Committee on Concrete and Concrete Aggregates made a large number of recommendations affecting standards and tentative standards. Among these was one for the adoption as standard of the tentative method of test for the amount of material in aggregates finer than No. 200 sieve, and of the method of test for the determination of voids in coarse aggregate for concrete. Other recommendations called for revisions in the standard specifications for curing portland cement concrete slabs with a calcium-chloride admixture, and for curing similar slabs by the surface application of calcium chloride, and also in the standard specifications for ready-mixed concrete. Revisions were also recommended in the tentative specifications for concrete and concrete aggregates. The only new tentative specification submitted by the committee this year was one covering lightweight aggregates for concrete. All of the recommendations of the committee were accepted.

Other features of special interest in the program having to do with concrete and allied subjects were papers on the Plastic Flow and Volume Changes of Concrete, and on the Effect of Freezing on the Permeability, Strength and Elasticity of Concrete and Mortar, and also certain revisions recommended by the Committee on Concrete Pipe in the tentative specifications for reinforced concrete culvert pipe.

Among other subjects of interest to the railways which were given consideration at the meeting were bituminous waterproofing and roofing materials, water for industrial uses, timber, and petroleum products used as lubricants. Still other subjects presented, but of somewhat indirect interest to the railways, were those having to do with paint and other protective coatings, and electrical insulating materials. Under the subject of bituminous waterproofing and roofing materials, the committee handling this subject proposed new tentative specifications for asphalt for use in damp-proofing and waterproofing below and above the ground level, and also new tentative

(*Continued on page 43*)

Economic Life of a Locomotive

A case study of the shop-repair costs of an individual locomotive during a life of eighteen years

By James R. Macken

Supervisor of Costs, Office of the Chief of Motive Power and Rolling Stock, Canadian Pacific

IT is a characteristic of the steam locomotive that one can only guess at the economics of its performance when he attempts to compute in any form a statistical record that falls short of at least 15 to 20 years of actual life in service, and every railroad man knows that a continuous record of locomotive performance over a period of 15 to 20 years is demanding quite a lot from the records.

In August, 1919, the Canadian Pacific placed in service a 4-6-2 passenger locomotive. This locomotive carried 200 lb. boiler pressure, had 42,400 lb. tractive force, 75-in. driving wheels, 25-in. by 30-in. cylinders, was equipped with superheater and feedwater heater, and had a loaded weight of 306,500 lb. A complete record of the maintenance life of this particular locomotive is available and an analysis of it may be of interest.

The Record of Eight General Repairs

Fig. 1 is a shop-repair-cost diagram covering 18 years of the life of this locomotive. Curve *A* on this diagram is an accumulative cost curve (accumulative shop-repair costs divided by accumulative locomotive-miles). Curve *B* is an actual cost curve between general repairs (cost of repairs divided by miles run since preceding repairs). Both curves include all intermediate shop attention between classified general repairs. The expenses included in this diagram are what are familiarly known as "classified shop-repair costs." There are no running-repair expenses included, but expenses incurred as the result of wreck damage are there, as are also the capitalized part of any betterments applied to the locomotive at any time during the 18 years.

The first general repair occurs in the fourth year. This is a straight machinery repair with all tubes removed and reset and driving tires turned. The cost per locomotive-mile at date of stopping for this repair, including the cost of the repair, is 4.18 cents.

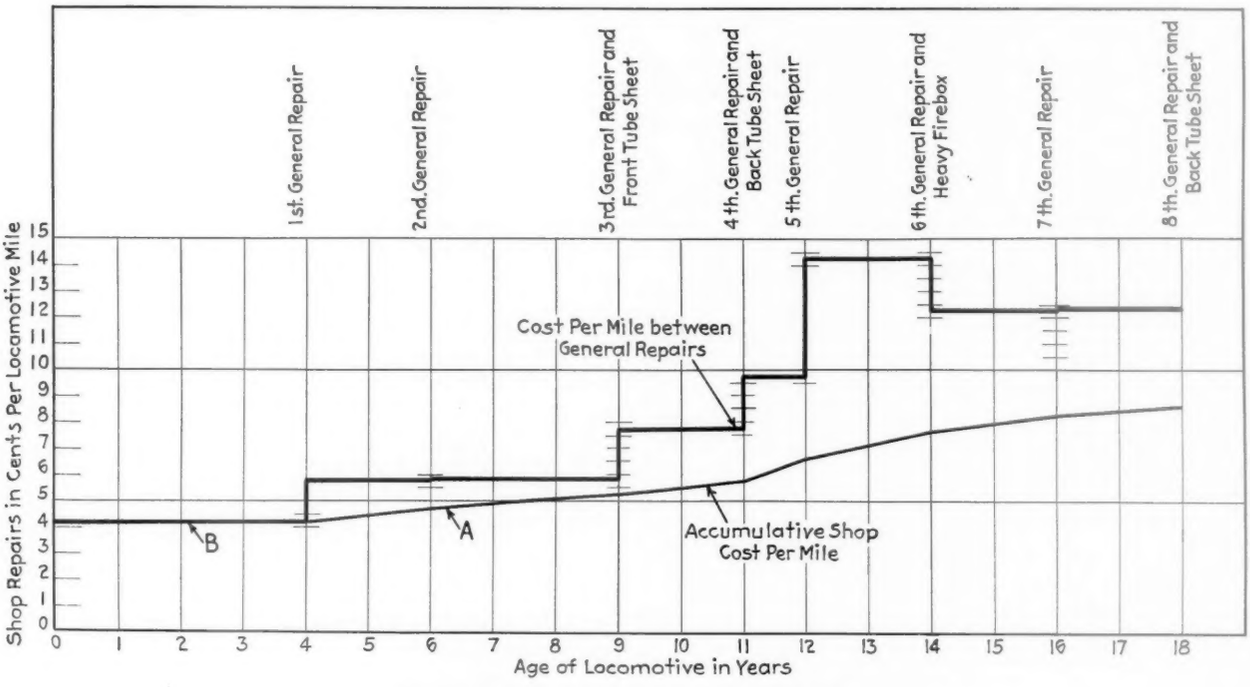

1st. General Repair
2nd. General Repair
3rd. General Repair and Front Tube Sheet
4th. General Repair and Back Tube Sheet
5th. General Repair
6th. General Repair and Heavy Firebox
7th. General Repair
8th. General Repair and Back Tube Sheet
Cost Per Mile between General Repairs
Accumulative Shop Cost Per Mile
A
B
Shop Repairs in Cents Per Locomotive Mile
Age of Locomotive in Years
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Fig. 1—Shop Repair Costs per Locomotive-Mile

The second general repair takes place in the sixth year. This is also a straight machinery repair with all tubes removed and reset and driving tires receiving a second turning. The accumulative cost per locomotive-mile at date of stopping for this repair, including the cost of the repair, is 4.85 cents.

The third general repair occurs in the ninth year. In addition to machinery repairs with all tubes reset, at this shopping the locomotive had a new set of driving tires applied and a new front tube sheet. The accumulated cost per locomotive-mile at date of stopping for this repair, including the cost of the repair, was 5.23 cents.

The fourth general repair occurs in the eleventh year.

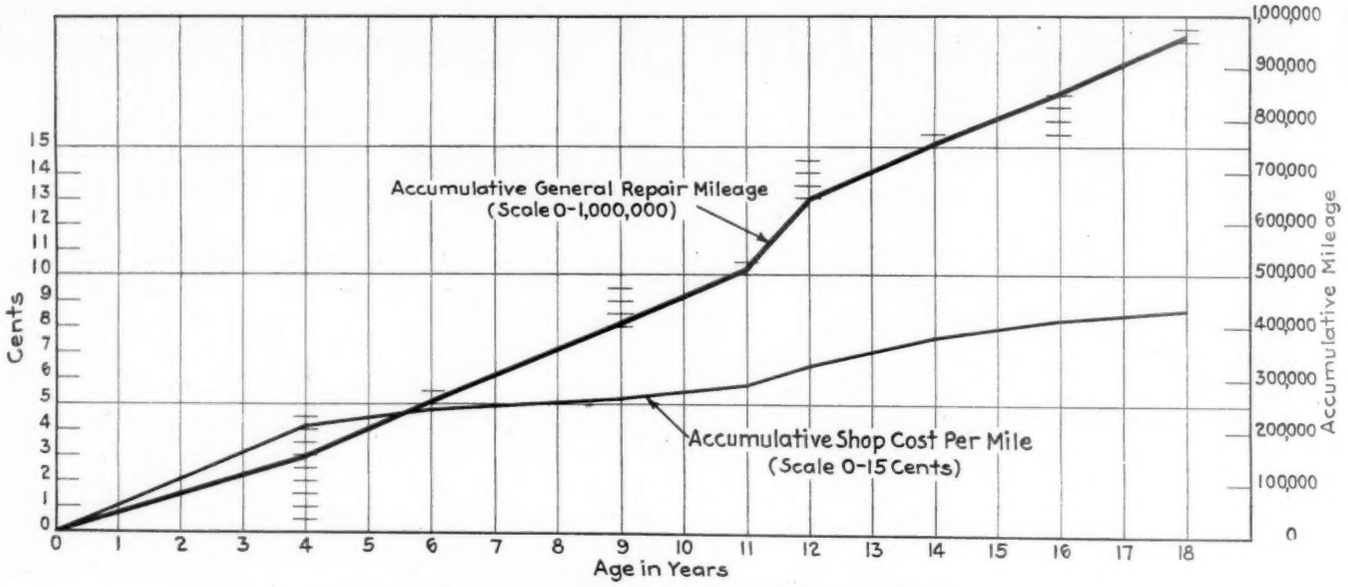


Fig. 2—Accumulative Locomotive Mileage and Accumulative Shop-Repair Costs per Mile

At this shopping, in addition to machinery repairs, a back tube sheet was applied and the second set of driving tires received a first turning. The accumulative cost per mile has now become 5.69 cents.

Our locomotive is now eleven years old and has made over 512,000 miles and so far has had no actual firebox repairs. The accumulative cost of shop repairs is still less than 6 cents per mile.

The fifth general repair occurs in the twelfth year. This is a machinery repair with tubes reset. It includes the cost of a second turning of the driving tires, applied in the ninth year, at an intermediate back-shop repair and the renewal of driving tires at this repair. The accumulative cost per locomotive-mile is 6.56 cents.

The sixth general repair occurs in the fourteenth year. This repair includes the first heavy firebox renewals. Right and left side sheets, inside throat and door sheets are renewed. The new driving tires applied in the twelfth year have been given a first turning at an intermediate back-shop repair and receive a second turning at this repair, the cost of both turnings being included in this repair. A general machinery repair is also given. The accumulative cost per locomotive mile is now 7.61 cents.

The seventh general repair occurs in the sixteenth year. This is a general machinery repair and includes the renewal of driving tires. The accumulative cost per mile is 8.17 cents.

The eighth general repair occurs in the eighteenth year. This is a general machinery repair with back tube sheet renewed and driving tires renewed because of sharp flanges. The accumulative cost per mile is 8.62 cents.

We have now come to the eighth month of last year and as far as our record can reasonably go. Our locomotive has made just short of one million miles and has reached the peak of the accumulative shop cost per locomotive-mile. Our available records for this class of locomotive indicate these costs will vary between eight and nine cents per locomotive-mile for a considerable future life of the locomotive.

Fig. 2 shows the accumulative shop cost plotted with the accumulative general-repair mileage and indicates, among other things, that the first 200,000 miles were

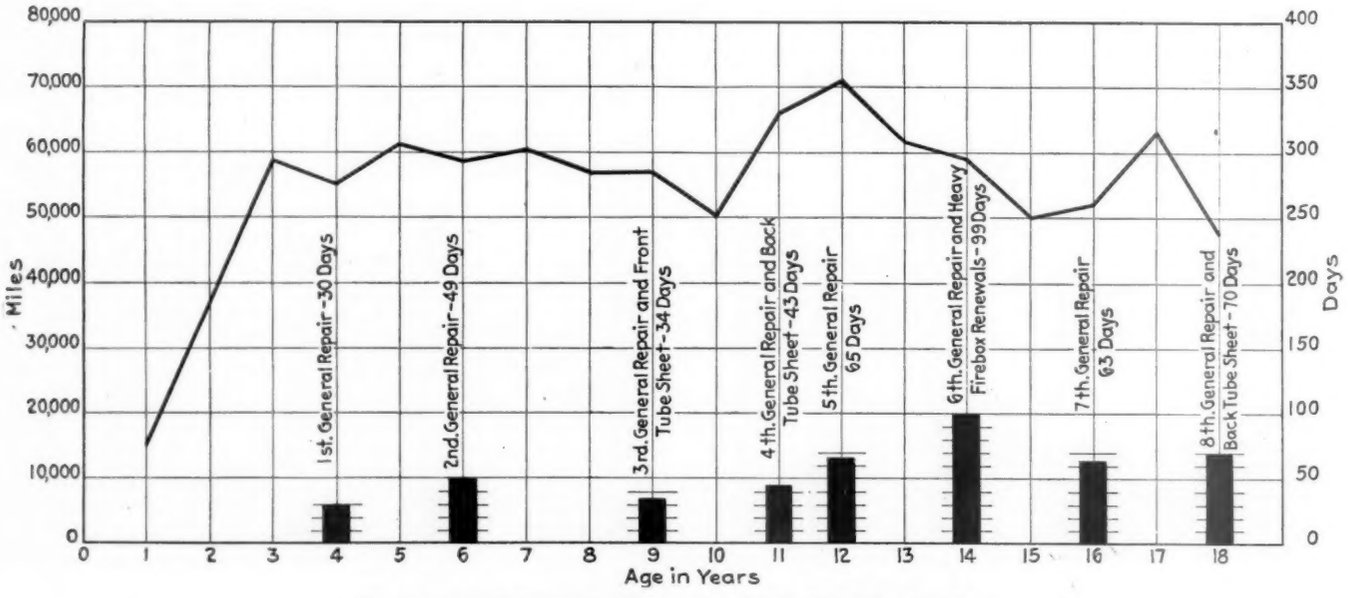

1st. General Repair -30 Days
2nd. General Repair -49 Days
3rd. General Repair and Front Tube Sheet - 34 Days
4th. General Repair and Back Tube Sheet - 43 Days
5th. General Repair 65 Days
6th. General Repair and Heavy Firebox Renewals - 99 Days
7th. General Repair 63 Days
8th. General Repair and Back Tube Sheet - 70 Days
Miles
Days
Age in Years

Fig. 3—Annual Locomotive-Miles and Yearly Out-of-Service Days

made at a shop-repair cost of a trifle over four cents per mile. As this cost trend is relatively correct for all classes of road engines, it may be assumed that shop-repair costs per locomotive-mile during the first five years of service will be approximately one half of these costs at maturity. Elaborating this statement a little further, the reduction in shop costs alone on a new $100,000 locomotive during, say, the first five years of its life will pay for the amortization of the investment and interest charges for this period with something left over for the second five years of service, which will still be about 25 per cent less than costs at maturity.

This chart suggests that the infiltration of modern power, where needed, is economically desirable, especially at a period of recovery in traffic, so that improvement in net earnings may be accelerated by providing reduction in operating costs, through retirement of worn-out equipment and addition of modern equipment, at a time when investment interest charges are at a minimum.

Fig. 3 shows the annual mileage and detention periods. Detentions between the fourteenth and seventeenth years of age have been influenced by reduction in working time at main repair shops due to traffic recession between 1932 and 1933, but, even allowing for this, our locomotive has lost only 7 per cent of its possible serviceable life in 18 years. The annual mileage between the fourteenth and the seventeenth years has also been influenced by traffic recession between 1932 and 1935.

This analysis suggests a study of locomotive shop maintenance costs, especially of that class of power which has been dropped from first-class revenue service for excessive fuel consumption under modern operating conditions, unsuitability to handle extended runs or to meet accelerated service or both. If such an analysis is made, there will be found a period in the life of a modern engine when reduction in shop maintenance will make the investment in new power singularly attractive.

Materials in the Spotlight

(*Continued from page 40*)

specifications for coal-tar pitch for roofing, dampproofing and waterproofing. In addition, many changes, mostly minor in character, were recommended and approved in a number of tentative specifications for various types of roofing and roofing materials.

The report of the Committee of Water was largely a review of the activities of the several subcommittees handling this subject, but this report was supplemented by a number of papers dealing with various methods of testing water, including one on the Determination of Hardness in Water by Direct Titration, and another on Published Studies on the Corrosion Cracking of Stressed Mild Steel in Water Solutions.

The Committee on Timber submitted and secured approval of a new tentative standard covering a method of test for tar acids in creosote and in creosote-coal tar solutions, this method being identical in substance with the standard method adopted by the American Wood-Preservers Association. The committee also received affirmative action on its proposal that the present tentative specifications for timber piles and for structural wood joists and plank, beams and stringers, and posts and timbers, be submitted to letter ballot for adoption as standard. Both of these specifications are identical with or in substantial agreement with those adopted by the American Railway Engineering Association.

Seaboard Utilizes Spring Switches

(*Continued from page 38*)

a siding without stopping, it is possible to advance a train from one siding to another on short time. Close meets can be made with safety because the block office and signal, with a man on duty, are located at a strategic point for the operation.

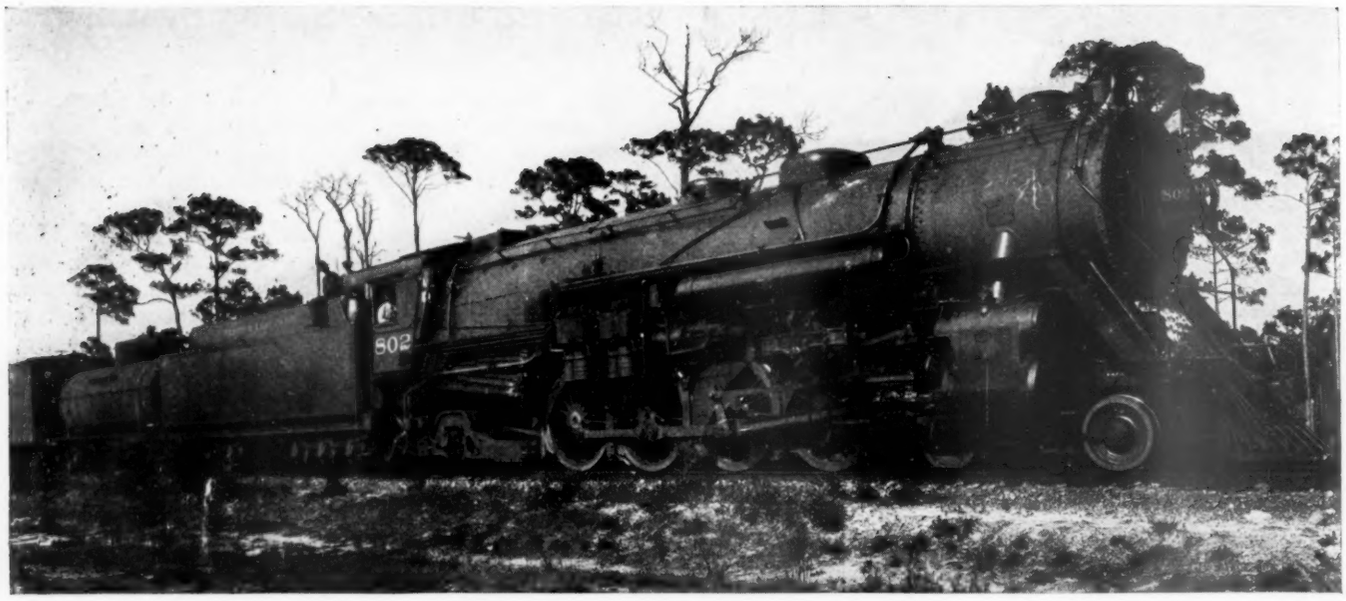
The fact that the sidings are long enough to hold a train of 60 cars facilitates the execution of non-stop meets for passenger trains. On February 8, two of the Orange Blossom Specials, No. 308 northbound and No. 7 southbound, met at McBee without either train stopping. On February 28, No. 108 northbound met No. 107 at Blaney and No. 7 at Bethune, with no train stop being made. On April 12, No. 108 met No. 107 at Weddell, No. 7 at Bethune, and No. 307 at Kollocks, without any of these trains stopping at the meeting points. Again on April 15, No. 108 met No. 107, No. 7 and No. 307, with only a two-minute stop for No. 108 at Fulton. Numerous other examples of non-stop meets or close meets, in which one of the trains stopped only two or three minutes, are readily apparent from a study of the train sheets.

Switch Layouts Well Constructed

At the north ends of the passing tracks where the new No. 16 turnouts were installed the entire switch layouts were built new to insure proper operation of the spring switch and lock equipment. The rail is 100 lb., and the switch points are 30 ft. long with 1¼-in. reinforcing instead of the usual ⅜-in., the bars being riveted to the points. New sawed cypress ties were installed throughout the turnout.

Cut gage plates of open-hearth steel, ¾ in. thick, 7 in. wide and 3 ft. long, are used on the first two ties under the points and also on the tie ahead of the points. Nine ¾-in. bolts extend through each plate and the tie. On the three first ties Racor adjustable rail braces are used, and on the tie ahead of the points additional braces were placed on the gage side of the rails to prevent their rolling out. An insulated gage plate, together with adjustable rail braces, was placed on the eighth tie, the plate being extended and bolted to the base of the crank used in the connection for operating the lock plunger. On the first two ties under the point, plates bolted to the ends of the gage plates are attached to the base of the switch mechanism. A plate ¾ in. thick, 6 in. wide and 11 ft. long extends from the end of the mechanism to the crank base. This plate also serves to prevent shifting of the ties, and on the opposite end of the ties, a strap ¾ in. by 2½ in. is bolted to the 10 ties in the layout. With this arrangement of plates and adjustable braces, the relative position of the various parts can be established and maintained properly, a matter which is highly essential to the proper performance of such a layout.

The spring switches were installed by the signal forces of the Seaboard Air Line. One crew, consisting of a foreman and four men, went through first, mixing concrete, stringing the line wire and bonding the rail. Later this crew was combined with another crew, including a foreman and eight men, which installed the spring switches complete with plates and braces. A camp train was used, the necessary material for all 12 installations being carried through on the train, rather than having the material shipped to each individual point. With this method of organization, a complete spring switch installation was made every 1½ days.



One of the Florida East Coast Freight Engines that Makes a High Average Monthly Mileage

Increasing Locomotive Mileage by Short Runs

Florida East Coast devises system of turn-arounds to increase utilization of engines

THE main line of the Florida East Coast is only 366 miles long; yet, in January, 1937, passenger engines 435 and 446 made 13,393 miles each, or a daily average of 432 miles each. In February, engine 442 made 13,150 miles, or an average of 469 miles daily. These records are samples of the locomotive utilization on the F.E.C. on which railway all passenger engines are averaging 7,500 miles per month, and freight engines 3,000 miles per month. On the basis of through runs, the maximum daily mileage would be 366 miles, the distance between Jacksonville and Miami. However, the results quoted above have been accomplished by means of turn-around runs, with short lay-overs between, a method of operation which has also reduced engine-house expenses.

Specific Cases

Before outlining the history of these operations, an analysis of the specific locomotive operations will be illuminating. The locomotives in main line service are operated in these turn-arounds between New Smyrna and Jacksonville, 125 miles on the north end, and between New Smyrna and Miami on the south end.

A typical daily assignment on the north end is as follows: The locomotive leaves New Smyrna on train 36 at 4:10 a.m., arriving at Jacksonville at 6:45 a.m. After 1 hr. 15 min. layover, it leaves Jacksonville at 8 a.m., pulling train 33, and arriving at New Smyrna at 10:22 a.m. It leaves New Smyrna on train 30 at 1:20 p.m., after a 2 hr. 58 min. layover, arriving at Jacksonville at 4:55 p.m. After a 4 hr. 35 min. layover, it leaves Jacksonville at 9:30 p.m. on train 75, arriving at New Smyrna at 12:10., with a four-hour layover until it begins its next day's service at 4:10 a.m. on train 36 again. Thus, assuming an on-time performance, the locomotive is in actual road service every day for nearly 12 hours, making two round trips, or 500 miles, on a 125-mile run.

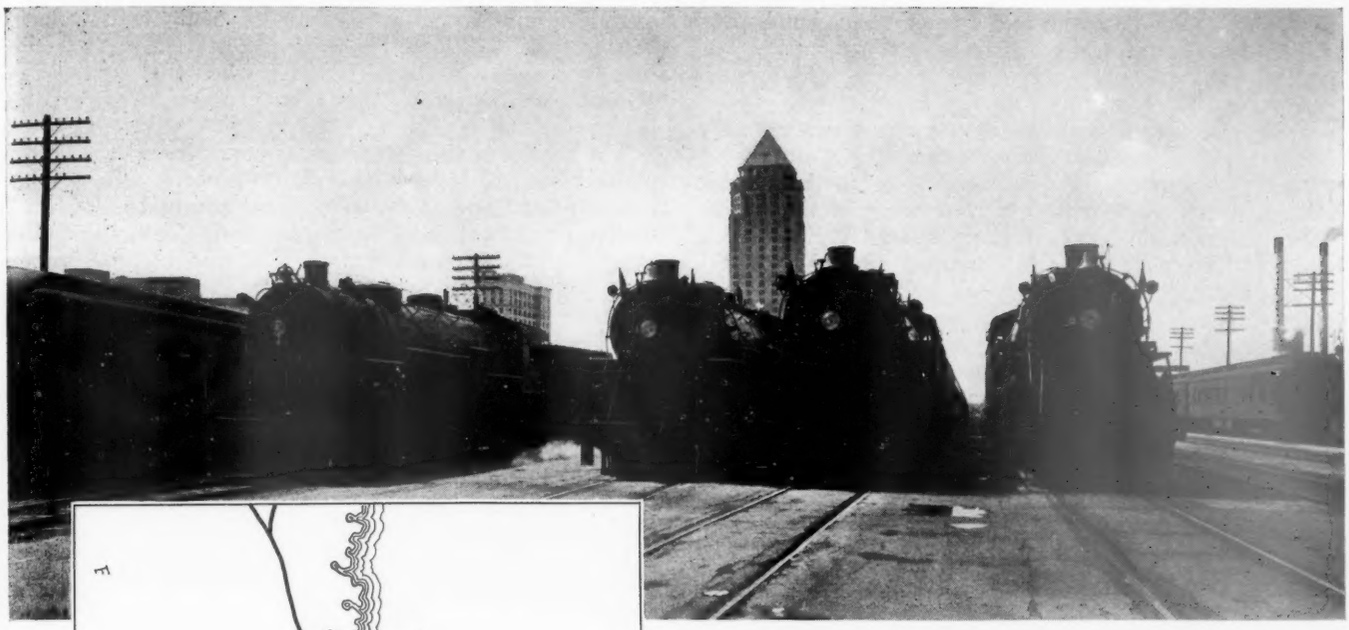
On the south end, one round trip, 481 miles, is made daily between New Smyrna and Miami. The layovers at each point average about 5 hr. 30 min., so that these

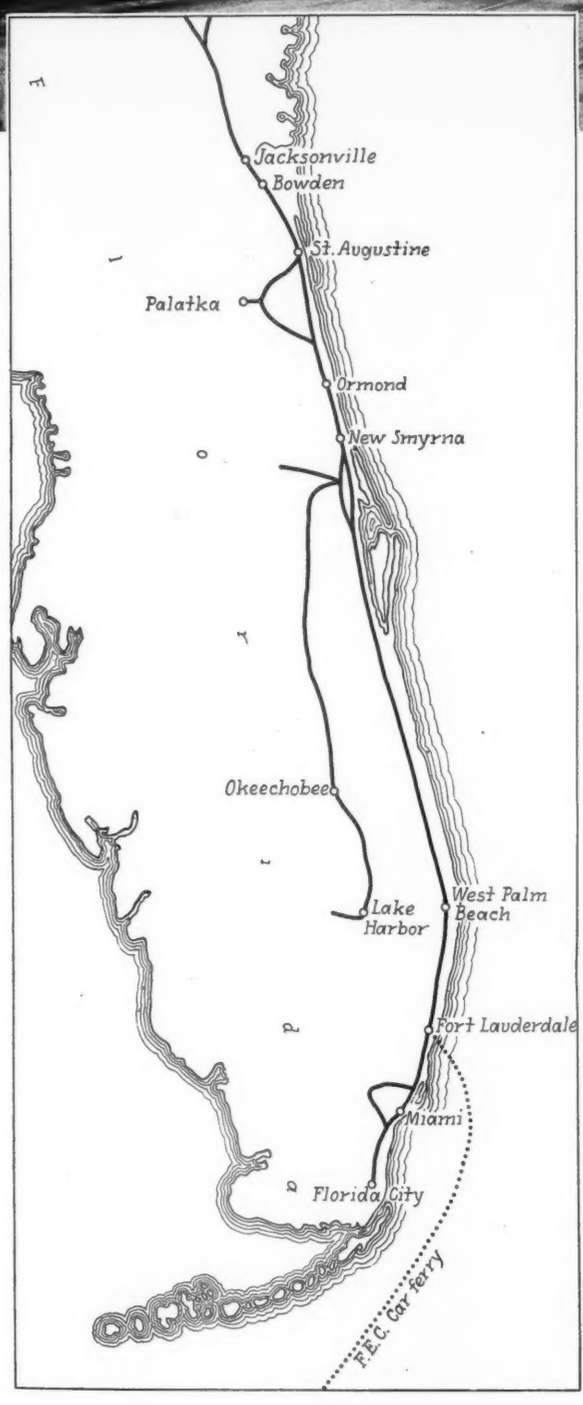
Table 1—Number Of Locomotives Used

	Year 1935	Year 1936	Year 1937
January	70	75	88
February	81	84	91
March	81	84	
April	83	82	
May	72	65	
June	49	51	
July	51	44	
August	48	50	
September	50	54	
October	52	51	
November	61	69	
December	72	81	

Table 2—Locomotive Mileage

Year	Passenger	Freight
1932	944,504	518,734
1933	942,087	537,853
1934	1,178,636	609,176
1935	1,366,752	654,373
1936	1,487,263	901,674





Above: Passenger Locomotives of the Florida East Coast at the Jacksonville Station. Left: The F. E. C. Parallels the Ocean

locomotives are in actual road service approximately 13 hr. daily.

The Florida East Coast, quite a number of years ago, following the practice common to all railways at the time, operated locomotives over engine districts from 117 to 156 miles in length. On three of these districts the locomotives in passenger service were making a round trip each day for four or five days and then cut out for boiler wash and light running repairs.

Table 3—Passenger Locomotives

Eng. No.	Miles—Season 1936 Dec.	Jan.	Feb.	Total	Eng. No.	Miles—Season 1937 Dec.	Jan.	Feb.	Total
302...	6,818	7,062	3,497	17,377	302	7,549	7,549	5,844	20,942
313...	6,566	7,549	6,088	20,203	303	3,653	7,062	....	10,715
421...	840	9,464	10,080	20,384	312	7,983	11,224	9,430	28,637
422...	....	420	9,673	10,093	422	1,348	7,306	6,221	14,875
423...	664	5,460	6,090	12,214	423	....	4,935	4,864	9,799
425...	3,870	5,356	5,670	14,896	424	5,925	10,815	8,358	25,098
432...	2,125	12,176	12,176	26,477	425	4,535	6,090	5,060	15,685
435...	5,887	13,150	13,150	32,187	426	1,672	6,818	6,332	14,822
438...	5,940	13,360	13,150	32,450	428	1,118	5,677	5,825	12,620
442...	7,726	13,360	12,406	33,492	432	1,361	12,872	13,150	27,383
445...	4,450	10,120	11,380	25,950	435	9,978	13,393	7,871	31,242
446...	7,172	12,176	12,176	31,524	437	7,748	12,906	8,976	29,630
449...	5,105	7,994	9,024	22,123	438	9,015	13,384	9,464	31,863
451...	254	6,474	4,929	11,657	446	8,280	13,393	6,868	28,541
					447	7,920	11,965	8,220	28,105
					450	8,519	11,688	9,497	29,704
					451	....	6,134	8,606	14,740
	57,417	124,121	129,489	311,027		86,604	163,211	124,586	374,401
Average per engine per month.				7,405					7,341

With the acquisition of heavier and more modern power, and providing modern enginehouse facilities, including hot water boiler washing systems, passenger runs were lengthened to operate over three districts—Jacksonville to Miami and New Smyrna to Key West. Freight engines also were operated over three districts—Bowden to Buena Vista on through freight trains. On each of these runs the locomotives made a one-way trip each day and required enginehouse attention at both ends of the runs. However, as Jacksonville is a jointly operated terminal, efforts were made to curtail the work done at that point as much as possible, in order to save terminal expense. This method of operation, however, required running repair forces at Bowden, New Smyrna, Buena Vista and Key West. Boilerwashing was done

at Bowden, New Smyrna and Buena Vista, but because of the better boiler design on the newer locomotives, feed water pumps and hot water boiler washing, the washing period was extended to 15 days.

It will be noted from one of the accompanying statements that the number of locomotives used during the winter season is nearly double that used in the summer season. This made it necessary to increase the enginehouse forces at all points during the winter months, and make reductions during the summer months, and this labor turnover, of course, caused loss of efficiency and extra expense. Also, with the loss of business during the depression, the maintaining of running repair forces at four enginehouses to take care of the locomotives on these long runs was too expensive for the number of locomotives to be handled.

As the New Smyrna engine terminal is well equipped to handle a comparatively large number of locomotives economically and is also well equipped for handling back shop repairs; also because of the fact that running repair forces are necessary at this point to take care of branch line locomotives, it was decided that it would be more economical to discontinue the longer engine runs and operate all of the locomotives, except those in local service south of Ft. Pierce, out of New Smyrna. Under this plan, the enginehouse forces at the other terminals were reduced to the minimum for taking care of emergency running repairs, all boiler washing and major enginehouse attention being given at New Smyrna. This also reduced the labor turnover greatly, since, when business decreased, those employees who were released from running repair work were immediately placed on back shop work, and during the course of the summer handled the greater part of the back shop work needed to get the locomotives in condition for the next winter's business.

Table 4—Freight Locomotives

Eng.	Miles—Season 1936				Eng.	Miles—Season 1937			
No.	Dec.	Jan.	Feb.	Total	No.	Dec.	Jan.	Feb.	Total
703...	747	2,955	3,291	6,993	702	268	2,698	3,004	5,970
704...	2,048	2,880	2,898	7,826	703	....	1,296	2,251	3,547
705...	2,190	2,952	1,658	6,800	704	1,451	2,420	2,279	6,150
708...	1,038	1,556	1,064	3,658	705	1,590	2,107	1,024	4,721
714...	516	2,128	628	3,272	708	1,285	1,668	2,252	5,205
715...	1,840	2,936	2,458	7,234	711	3,352	3,104	3,450	9,906
802...	....	2,934	1,966	4,900	714	1,720	1,730	2,724	6,174
803...	3,068	2,768	3,308	9,144	715	3,998	3,438	2,656	10,092
809...	4,833	6,036	5,926	16,795	803	4,818	4,546	2,490	11,854
811...	4,919	6,361	6,958	18,238	804	1,923	5,133	3,965	11,021
817...	4,748	4,194	622	9,564	807	3,780	1,808	3,503	9,091
818...	3,086	1,194	2,647	6,927	810	....	5,813	3,446	9,259
					811	2,070	750	4,275	7,095
					812	6,235	2,534	471	9,240
					814	5,434	4,912	4,768	15,114
					817	6,904	3,460	4,716	15,080
					821	1,128	4,110	4,762	10,000
	20,033	38,894	33,424	101,351		45,956	51,527	52,036	149,519
Average per month per engine.				2,815					2,931

In most instances, the locomotives make a round trip each day between New Smyrna and Miami, and two round trips between New Smyrna and Jacksonville. This assignment, while not assigning one locomotive to each engineman, does keep the same crews operating from day to day on the same engine, and in this way better care is given the locomotives on line of road. The principal advantage of this assignment, however, is the fact that each locomotive comes into the enginehouse regularly each day at a scheduled hour and is cared for by the same enginehouse crew each day, which concentrates the responsibility for enginehouse attention to each locomotive. Under this assignment, locomotives going into Jacksonville do not go into the enginehouse, but are inspected, turned and placed on the outgoing track, thus saving terminal charges. Also, by using better boiler washing methods and by keeping careful check on the dissolved solids in the feed water when the engines arrive at New Smyrna, it has been possible to extend the boiler washing period to 30 days.

The results of the present assignment have been better maintenance of locomotives than formerly, although at less expense; and at the same time, the miles per locomotive per month have been increased. Tables 3 and 4 show the mileage per locomotive per month in passenger and freight service, respectively.

Portable HCN Fumigator

A PORTABLE hydrocyanic acid gas generator, highly adapted for fumigating coaches, sleeping cars, diners, and freight cars or any buildings requiring fumigation to rid them of insects or other rodents, has been developed by the R. & H. Chemicals department of E. I. du Pont de Nemours & Co., Inc., Wilmington, Del. The principal features of the new generator are its portability, making it readily movable from place to place; its comparative safety of operation, and its effectiveness in generating and dispensing a highly toxic gas.

Operation of the Generator is Entirely from Without the Premises Being Fumigated

The new generator is essentially a simple upright metal cylinder with a suitable mixing chamber inside, which is equipped with a gas discharge hose and nozzle, by means of which the gas can be interjected into any area from without, thereby protecting the operator against any possible exposure to the poisonous fumes. The generator is charged with Cyanegg (du Pont 96 per cent sodium cyanide) and with sulphuric acid and water according to directions, and goes into immediate operation, producing hot HCN gas under slight pressure which passes into the area being fumigated. After fumigation has been completed, the generator is cleaned, and is then ready for another charge.

For convenience and economy in fumigating areas of various sizes, the generator is made in three fumigating capacities—10,000 cu. ft., 25,000 cu. ft., and 100,000 cu. ft. Each pound of sodium cyanide used in the generators produces about 8 oz. of HCN gas, sufficient to fumigate 1,000 cu. ft. or more, depending upon conditions.

Communications and Books . . .

Sane Tie Production

PHILADELPHIA, PA.

TO THE EDITOR:

It was with keen interest and satisfaction that I have read your editorial entitled "A Time to Stand Firm" in the *Railway Age* of May 15. You have covered the current situation with respect to crosstie production in forceful fashion, and your expressions should arrest the attention of those concerned with the service obtained from ties as well as those responsible for their procurement. Your continued interest in sane, stable tie manufacture and use is encouraging and helpful.

JOHN FOLEY,
Forester, Pennsylvania.
Chairman, Tie Committee, A.R.E.A.

Local Passenger Business

WAUWATOSA, WIS.

TO THE EDITOR:

Much attention has been paid by railroad passenger traffic men and operating departments to the development of long distance rail travel. The local traffic and medium distance traffic have possibilities which, in general have hardly been touched. It is true that in many cases the local passenger traffic is comparatively costly to handle and may not be worth the effort required to secure it. However, it appears to me that good local passenger service offers the best means the railroads have of winning converts from other means of transportation. All of us find occasion very frequently to travel for short distances and quite often are tempted to use means of public transportation, rather than to drive. Where railroad service is available, it is by far the fastest and most comfortable means of local transportation.

To present a concrete situation, my city of Wauwatosa is located six miles west of Milwaukee on the main line of the Milwaukee Road. For my twelve cents fare between Wauwatosa and down town Milwaukee, I get transportation three times faster than any other method of public transportation. I get a fast comfortable ride and a good sample of railroad riding qualities and the excellences of modern equipment. After this local ride, I would be foolish, indeed, not to continue on the train on my longer trips. The local service here in Wauwatosa, in other words, encourages me to be a customer of the railroad on trips which actually earn money for the company, whatever profit or loss my twelve cents local fare may represent. But not one out of one hundred people here in Wauwatosa know what rail services are offered. Why not more encouragement for the small town and local rail passengers? It will help to form the habit of riding by rail, to the constant improvement of passenger revenues.

A. C. KALMBACH,
Editor, "The Model Railroader."

Shortsighted "Dick"

BROOKLYN, N. Y.

TO THE EDITOR:

In connection with the petty annoyances which sometimes fall to the lot of a railroad patron and which tend to turn away a passenger or alienate one who would be a friend to the road, the following is cited as a recent occurrence:

The writer was one of a party of some 150 who attended a convention in June. The special furnished by one of our foremost railroads left nothing to be desired—the company doing its utmost for the comfort, pleasure, convenience, and feeding of the party. On the return trip, the special was stopped and parked in the railroad yard at the far side of the station at a scenic resort less than 500 miles from New York, the party being given some 3½ hours to view nature's wonders.

On returning to the train about a half-hour before its departure, the writer went ahead to take a photograph of this special train. As his camera was opened, a uniformed "Dick" of the company appeared and said no photographing was allowed. He was presently joined by another of his kind in uniform. The writer was catechized—sample questions being, "Where are you from? What is your name? Do you belong to the party on the train? etc., etc." All such questions were properly answered, but this enterprising policeman still insisted that the photograph could not be taken. The writer reminded him that his duties were to watch for thieves; persons unlawfully riding trains; trespassers unable to account for their presence; shyster lawyers hunting for some photograph evidence to bolster up some fake case, etc.—and that the writer fell into none of these categories, which this policeman could readily observe. Nevertheless the taking of a photograph was still forbidden—it was dangerous; the photographer might get run over—and yet some 150 passengers had to cross those same tracks in order to get to this train.

Having been a passenger on many such specials and private trains over a period of years, and never before having been prohibited from photographing such trains for visible evidence, in future years, of a splendid railroad journey, the writer was astounded, and forgot that a high official of the passenger department had accompanied our train throughout, to whom he could have appealed. The train was well under way before this passenger man's presence was remembered, and naturally he was indignant upon being apprised of the occurrence.

The writer happens to belong to several railroad and "fan" organizations, and the treatment referred to is in striking contrast to the privileges afforded in the last year or two to the so-called "fans" to take photographs. However, the writer does not feel any animosity toward this railroad for the episode, but, rather, resents the small brain sometimes possessed by one who may be clothed with brief authority.

RAILROAD FAN.

New Books

Saward's Annual. By Frederick W. Saward. Published by Saward's Journal, 15 Park Row, New York. 232 pages. Price, $2.50.

The nineteenth yearly edition of Saward's Annual statistical review of the coal trade embraces details relative to output, prices, freight rates, transportation, exports, computing tables, stokers and other details of importance to both the wholesale and retail coal dealer.

Vanadium Steels and Irons. Published by the Vanadium Corporation of America, 420 Lexington avenue, New York. 189 pages, illustrated. Bound in flexible leatherette. Price, $1.25.

Vanadium Steels and Irons is a review and reference source for the chemical composition, physical properties, heat treatment, recommended applications and fabricating procedure of all irons and steels in which vanadium is an alloying element. Structural steels for light and heavy sections, S.A.E. alloy and related high-test steels, spring steels, cast steels, tool steels and nitriding steels are treated comprehensively, with complete data on physical properties and heat treatment. In each case conditions under which most favorable service results can be expected are specifically outlined and suggestions made for correlating the choice of alloy steel and its heat treatment with the fabricating procedure to be used. Charts and tables are based on the latest authentic tests and analyses. Bibliographic references under each chapter head include a great deal of new work, and a special chapter is devoted to a consideration of high-test alloy cast irons. The index is particularly complete. The book is available, without charge, to executives and engineers actually engaged in using or specifying alloy steels and irons. Such requests must be on business letterheads.

NEWS

Increased July 4 Passenger Traffic

Preliminary surveys indicate that travel on New York roads topped 1936

Although no definite figures as to numbers of passengers carried are yet available, roads entering New York have made it known that their traffic over the July 4 week-end period was considerably greater than during the corresponding period of 1936. Simultaneously with the general exodus from New York for the four-day holiday period, certain roads operating to New England, upper New York State, and eastern Pennsylvania points completed the annual transportation of juveniles to summer camps.

The New York Central reports a 30 per cent increase over the holiday business of last year, indicated somewhat by the operation of 150 extra trains in and out of Grand Central over the four-day period, July 2 to 5, inclusive. Friday, July 2, was the heaviest day, due in part to the operation of special trains to Citizens' Military Training camps in upper New York state and the handling of 12 summer camp runs. The New Haven, the other occupant of Grand Central terminal, enjoyed increases in traffic over last year's July 4, operating outbound on July 2, its busiest day, 24 extra sections, including 165 coaches and 76 Pullmans. Special difficulty was encountered in the abnormal inflow of traffic to New York on Tuesday morning, which, added to an already heavy commuters' traffic, caused congestion at "bottle-neck" points. The road's camp business was also exceptionally flourishing over the week-end.

The Delaware, Lackawanna & Western carried over 1,100 more passengers on through trains over this year's "Fourth" than in 1936, while suburban business reached a gratifying record. On July 5, the high-water mark, the road ran 16 extra trains and carried 4,002 passengers inbound and 1,048 outbound. The Lehigh Valley, in addition to a noticeable increase in patronage of its regular Niagara Falls, N. Y., Sunday excursion runs, found it necessary to add sections to all through trains to carry a traffic substantially better than last year's. The New York, Ontario & Western, which is particularly subject to seasonal traffic, reports a 50 per cent increase on the 1937's holiday season over that of 1936.

The Baltimore & Ohio's week-end business at New York exceeded all expectations, while the Central of New Jersey saw an increase in passenger volume over last year's "Fourth" of 50 per cent in rail carriage and 39 per cent in trans-bay service on the Sandy Hook steamers. The latter road also reports an excellent suburban traffic, due probably to the congestion of highways surrounding the metropolis.

The Pennsylvania ran 180 extra trains over the four-day period and on regular trains found it necessary to add 1,100 extra cars. The Erie carried over 12 per cent more passengers than in the same four-day period last year, with especially heavy traffic to points on the Delaware division. In addition, the road operated 15 special trains to summer camps on July 1. On Sunday, July 4, the short-haul business picked up greatly, while the evenings of July 2 and July 5 saw the peak of through traffic.

Traffic in and out of Boston, Mass., was also heavy. Fourth of July holiday revenues of the Boston & Maine exceeded those of last year by over 15 per cent, in traffic reported to be the heaviest since 1929. This comparison excludes the abnormal movement of passengers to race tracks, which did not occur last year.

Washington Enthusiasts

The Washington (D. C.) Division, Railroad Enthusiasts, Inc., were scheduled to hold an informal meeting at Silver Spring, Md., on July 10. Members were urged to "bring anything on railroading that you think might interest others."

Strike Violence in Pa.

Investigation of an attempt made to dynamite a freight train at a point near the junction of the Conemaugh & Blacklick and the Pennsylvania at Morrellville, Pa., has brought a confession alleging participation by a leader of striking employees of the former road, a subsidiary of the Bethlehem Steel Corporation.

Labor Act Ruling

District and division storekeepers of the Chicago & North Western are within the classification "employee" as defined in section 1 of the Railway Labor Act, according to a decision of the Interstate Commerce Commission made public last week. The decision in Ex Parte 72 (Sub.-No. 1) resulted from the request of the American Railway Supervisors Association, Inc., that the commission interpret as to this C. & N. W. group its orders defining employees and subordinate officials.

Private Business' Front-Line Trench

D. D. Conn sees transportation in that role at the present time

That the most outstanding single departure from the American ideal of private enterprise is found in transportation, was the opinion expressed by Donald D. Conn, executive vice-president of the Transportation Association of America, in an appeal to business interests in the middle west to "assist in the development of a national movement which gives promise of re-establishing an appreciation of the meaning of the American system by making a practical demonstration that transportation can and must remain as a profitable private enterprise." His appeal was made on June 30 at Chicago to a group of business executives attending a luncheon sponsored by Edward E. Brown, president of the First National Bank of Chicago; Gen. Robert E. Wood, president of Sears, Roebuck & Company; Benjamin F. Affleck, retired president of the Universal Atlas Cement Company; J. L. Keeshin, chairman of the Keeshin Transcontinental Freight Lines, Inc., and Homer B. Grommon, president of the Farmers National Grain Dealers Association.

"At the beginning," Mr. Conn continued, "private enterprise established and developed the American transportation system. For fifty years this development proceeded apace and was largely free from outside restraint or control. Then we embarked upon what was described as regulation and for the past fifty years most of what we have been doing has been done in the name of that term. Since 1887 we have failed in that field to follow the wisdom of the designers of the American idea. We have observed that the exercise of the so-called fostering care of the State originally invoked in the name of regulation has tended increasingly away from regulation toward full control. There are only two more steps. The next is management; the last is ownership. Then would come the deluge. Experience in many countries indicates that it would be a deluge of red ink. When it mounted so high as to threaten the treasury of the state, the loss would be written off, defrayed by the taxpayers, all forms of transportation set up again under private enterprise, and the process would begin all over. Such are the facts and lessons of world experience.

"Government ownership of any one form

of transportation inevitably leads to government ownership of all forms. In turn, this means government ownership or complete regimentation of our major industry. Such a conclusion is inescapable under our form of government.

"I do not imply that regulation of competition, services, and rates does not have its value and is not in the public interest within fixed limits. However, we have long since passed the stage of sensible and necessary regulation and we have now entered the stage of absolute control. Moreover, the manner in which this control, by exercise of the sovereign power of the state, has been applied, automatically induces the next stage, which is management by the state. We need only review the activities of Congress, especially in recent years, to analyze the reasons for the many political investigations and legislative proposals, to realize that the trend toward absolute control is a definite part of a socialistic program. This continuing process leads to government ownership.

"The 'front line trench' of private enterprise is transportation. Between 15 per cent and 20 per cent of the wealth of the nation is invested in transportation and 30 per cent of our buying power. In a nation as far-flung as the United States it is the key-stone in the arch of private enterprise.

"With one hundred years of experience in the field of transportation, we ought to possess the foundational knowledge of what should or should not be done with this major problem, and not permit this vast industry to drift into government ownership through public default. Surely it is possible to assess this vast body of experience and produce a distillation that will reveal what really is best in the public interest."

President Signs "Seeing-Eye" Dog Bill

President Roosevelt has approved the amendment to the Interstate Commerce Act which will permit blind persons to take "seeing-eye" dogs with them in coaches and Pullman cars, under regulations of the Interstate Commerce Commission. The bill (H.R. 6049) was passed by the Senate on June 28 after having been approved by the House of Representatives three weeks earlier.

Drought-Relief Rates

The Interstate Commerce Commission has authorized the Minneapolis, St. Paul & Sault Ste. Marie and the Great Northern to establish reduced rates for the transportation of live stock from drought-stricken areas of Montana and North Dakota to available feeding lots in those states and Minnesota. The order permits a rate to the feeding point of 85 per cent of the commercial tariff rate, and a return rate equal to 15 per cent of the commercial charge.

Accounting for Taxes

The Interstate Commerce Commission has issued an order prescribing the accounting procedure whereby railroads shall record taxes, other than property taxes, assessed against lessor companies and assumed by lessee. The order stipulates that the lessee shall charge such taxes paid by it to account 542, "Rent for leased roads and equipment"; the lessor shall credit these taxes to account 509, "Income from lease of road and equipment," and charge them to the appropriate tax account.

Air Brake Meeting Correction

In the report of the concluding session of the Air Brake Association meeting, which was held at Atlantic City, the *Daily Railway Age* in its issue of June 21, page 1040D16, made the statement that the paper on the Type AB Empty and Load Brake Equipment, presented by the Pittsburgh Air Brake Club, was read by George Cotter, Westinghouse Air Brake Company. This paper, which was presented by the Pittsburgh Air Brake Club, was read by E. F. Richardson, assistant engineer of motive power, Bessemer & Lake Erie Railroad, and not by Mr. Cotter.

Government to Act in Philippine Insolvency

The Philippine Department of Justice announces that it will take action against the Philippine Railway in involuntary insolvency. The major bond issue of the carrier matured on June 30 and the suit of the Philippine government is reported to be in behalf of creditors on the islands. Plans of creditors in the United States remain as yet unrevealed. The Philippine Railway Company controls 295 route miles on the islands of Panay, Negros, and Cebu. Its outstanding capital stock totals $5,000,000 and its funded debt is placed at $8,549,000.

Two Sections of Ashland Limited Collide

Man failure was cited in a preliminary investigation as the cause of a collision between the first and second sections of the Ashland Limited of the Chicago & North Western at Davis street, Evanston, Ill., on July 2. The collision occurred when the first section stopped at Davis street at 7:20 p.m., according to schedule. The second section, following immediately, went through two caution signals, disregarded a stop signal and ran into the rear of the first section. While slight damage was done to the rear car of the first section, 25 persons incurred injuries requiring hospital treatment and several others were shaken up.

Air Lines Carried 98,035 Passengers in May

The 20 scheduled air lines operating in continental United States in May carried 98,035 passengers, and flew 5,783,643 miles and 42,019,428 passenger-miles, according to reports to the Bureau of Air Commerce, U. S. Department of Commerce. The lines carried 591,011 lb. of express and flew 342,175,590 express pound-miles during the month.

In May, 1936, the same number of companies transported 96,300 passengers a total of 40,090,763 passenger-miles, and carried 483,798 lb. of express a total of 255,623,294 express pound-miles. In May this year only 59.26 per cent of the seat-miles flown were used, whereas in the same month of 1936 the utilization was 69.42 per cent.

Would Facilitate Offering of Relief Rates

The Senate committee on interstate commerce has reported favorably S. 2619 which is described as a bill "designed to correct certain inequities in the operation of section 22(1) of the Interstate Commerce Act." This section provides for reduced rates to meet such emergencies as drought and floods.

The bill, which has the approval of the Interstate Commerce Commission and the Association of American Railroads, would enable carriers in such emergencies to accord relief to a particular class for which relief is reasonably necessary and proper without prejudice to their right to charge full commercial tariff rates on shipments of other classes not similarly affected by the emergency.

Annual Report of Indian Railways

The Class I railways of India earned a net profit of 338,162,000 rupees* for the fiscal year ended March 31, 1936, compared with 331,877,000 rupees for 1934-35, according to the report of the government railway board. Gross earning for the last fiscal year totaled 1,001,903,000 rupees.

During the 1935-36 period 111 miles of new line were opened for traffic, bringing the total route mileage to 43,118. Freight traffic increased from 84.5 million tons in the previous year to 86.9 million tons in 1935-36, and approximately 7 million more passengers were carried in the latter period.

Among the steps taken to meet highway competition during the year were the adjustment of rates and fares to compare favorably with those of road carriers and the adoption of legal measures to prevent trucks from overloading.

* The rupee is valued at approximately $.6180 in U. S. currency.

Seaboard's Truck Plans Opposed

Applications made by the Seaboard Air Line, seeking interstate operating certificates for eight supplementary motor truck lines in North Carolina, South Carolina and Virginia, have been protested by the Southern Motor Carriers' Rate Conference and by counsel representing independent motor carriers at joint board hearings in Raleigh, N. C., and Columbia, S. C. The truck owners claim that the rail carrier holds "grandfather" rights on only 65 miles of motor route in North Carolina and that the routes sought will constitute a trucking system of 700 route miles in competition with existing highway facilities. They further insist that the eight separate applications be presented as one and that a board of representatives from the three states concerned be authorized to pass upon the application, in addition to the joint boards acting under the Interstate Commerce Commission.

Counsel for the Seaboard, on the other hand, argue that the road will transport over the routes applied for only l.c.l. shipments received at rail stations, on railroad bills of lading, and that the trucks will

operate solely in line-haul service between rail stations, no pick-up and delivery service being proposed. The rail carrier asserts that the purpose of the truck operations is threefold: (1) to consolidate l.c.l. shipments from local stations at key rail stations; (2) to permit the change of local freight train schedules from day to night service, in accordance with the desires of industrial plants, which prefer night switching; (3) to expedite the delivery of l.c.l. freight.

Equipment Depreciation Orders

The Interstate Commerce Commission has issued another series of sub-orders in No. 15100, Depreciation Charges of Steam Railroad Companies, prescribing equipment depreciation rates for the Detroit & Mackinac and five other small roads—the Milstead, the Mobile & Gulf, the Aberdeen & Rockfish, the Alabama Central, and the Carolina Southern. The composite percentages, which are not prescribed rates, range from 2.9 per cent for the Detroit & Mackinac to 13.61 per cent for the Alabama Central. The latter figure, however, is the rate prescribed for steam locomotives, since the road owns no other rolling stock. Prescribed rates for the Detroit & Mackinac are: Steam locomotives, 2.35 per cent; other locomotives, 9.75 per cent; freight-train cars, 2.58 per cent; passenger-train cars, 3.49 per cent; work equipment, 3.03 per cent; miscellaneous equipment, 18.48 per cent.

B. & O. Publication Features Women in Railroading

The place of women in railroading is the theme of the May issue of the "Baltimore & Ohio Magazine," which, its editors assert, "is published by, for and about women." Dealing with the contributions made to the industry by women employees and the wives of employees, the publication contains articles by those of the fair sex engaged in traffic, valuation, and transportation departments of various roads. There also appear special features concerning the recently inaugurated "stewardess" services on the B. & O. and various western systems and several items dealing with women station agents, tour directors, traffic representatives, etc. Illustrations depicting the employment of female labor by European railroads in the heavier occupations of track work and engine service complete the issue. The theme of the issue is due to a suggestion made by Daniel Willard, president of the road, in 1928, and since then has been embodied in one issue each year.

Non-Operating Unions to Take Strike Ballot

A resolution authorizing the taking of a strike ballot among members of the 14 non-operating brotherhoods, was adopted by 1,300 general chairmen of the brotherhoods at a meeting in Chicago on July 2. Similar action was taken by the Big Five brotherhoods at a meeting in Chicago on June 23. The action of the non-operating brotherhoods was due to failure to reach an agreement with the railroads on demands for an increase of 20 cents an hour in the wages of employees. Conferences between the two groups began June 3 at Chicago, and later were transferred to Washington, where they adjourned on June 25 in a deadlock.

The strike ballot will be submitted by chief officers of the various unions as quickly as possible and a meeting will be held in Washington in about three weeks to determine the outcome. Following the deadlock, the national railway mediation board was advised by the brotherhoods that their conferences had ended. The board has offered its services and may hold hearings next week.

Safety Council Reports Accidents

Motor vehicle accidents killed 37,800 persons in 1936, and were responsible for 34 per cent of the total accidental deaths in that year, according to statistics recently issued by the National Safety Council, Inc. This figure, which is 4 per cent over that given for 1935, constitutes an all time high, although, at the same time gasoline consumption rose 11 per cent and motor vehicle registrations climbed 8 per cent over the 1935 record.

A survey of air accidents, based on compilations of the Bureau of Air Commerce of the Department of Commerce, quotes a total of 67 deaths in accidents involving scheduled transport planes in 1936, or 9.9 fatalities per 100,000,000 occupant-miles, as compared with 29 deaths, or 5.6 per 100,000,000 occupant-miles in 1935. The greater part of the rail accident statistics given by the Council are based on Interstate Commerce Commission figures, which were reported for 1935-1936 in the *Railway Age* of January 23, page 186. Independent comparisons, based on the data of the U. S. Census Bureau, apportion to railroad operation 5 per cent of the fatal accidents occurring in 1935, exclusive of grade-crossing facilities.

Rail-Truck Mail Contract Not Subject to I. C. C., Says Examiner

Examiner T. Neftalin has recommended in a proposed report to the Interstate Commerce Commission a finding that the transportation by highway of United States mail and parcel post under a sub-contract with a railway company is not within the scope of the motor carrier act. The proposed report deals with applications of Freer Brothers Motor Express Lines which sought, in addition to common carrier certificates, a permit as a contract carrier to continue to transport only mail and parcel post between Ithaca, N. Y., and Oswego under a contract entered in November, 1934, with the Delaware, Lackawanna & Western.

The examiner observes with citations that "A railroad in carrying the mails is not hauling freight and does not act as a common carrier, with corresponding rights and liabilities, but in this respect serves as an agency of the government, and is as much subject to the laws and regulations of the post-office department as every other branch of the post-office." From this he concludes that "in the absence of specific authority conferred by statute, this commission has no jurisdiction over such transportation by railroad or by a carrier by motor vehicle under contract to a railroad." As instances of specific authority conferred on the commission in connection with the transportation of the mails the examiner cites the parcel post acts, the air mail act and the railway mail service pay acts.

Along with the recommended denial of the contract carrier application on the foregoing basis the proposed report finds that the applicant is entitled under the motor carrier act's "grandfather" clause to continue operation as a common carrier in interstate and foreign commerce over routes between Ithaca, N. Y., and Binghampton and Auburn; and that public convenience and necessity require the applicant's continuance of service over a route between Ithaca and Syracuse, N. Y.

American Welding Society to Meet in October

The eighteenth annual meeting and welding exposition of the American Welding Society will be held at Atlantic City, N. J., on October 18 to 22, inclusive, the meeting to be at the Hotel Traymore and the exposition at Convention Hall. Technical sessions on industrial research and fundamental research in welding, a joint session with the American Society of Mechanical Engineers, a symposium on alloy steels and a railroad session are among the features scheduled on the tentative program which is, in part, as follows:

MONDAY, OCTOBER 18
2 p.m.
Industrial Research

"Weldability of Low Alloy Steels," by W. L. Warner, Watertown Arsenal
"Survey of Low-Alloy Steels as to Weldability," by J. H. Critchett, Union Carbide & Carbon Research Laboratories
"The Problem of Correlation of Radiographs and Mechanical Tests of Welds," by J. T. Norton, Massachusetts Institute of Technology

TUESDAY, OCTOBER 19
9:30 a.m.
Fundamental Research in Welding

"A Study of Stress Relief in Metals by an X-Ray Method," by J. T. Norton, Massachusetts Institute of Technology

2 p.m.

"Static and Impact Tensile Properties of Stainless Steel Welds at Ordinary and Low Temperatures," by O. H. Henry, Polytechnic Institute of Brooklyn

Joint Session with American Society of Mechanical Engineers

"Resistance Welding Fabrication," by J. M. Cooper, General Electric Company
"Fusion Welded Fabrication," by H. N. Blackmon, Westinghouse Electric & Mfg. Co.

THURSDAY, OCTOBER 21
9:30 a.m.
Symposium on Alloy Steels

"Low Alloy Steels," by G. S. Mikhalapov, Heintz Manufacturing Company

FRIDAY, OCTOBER 22
9:30 a.m.
Railroad Session

"Building Up Locomotive Driving Box," by I. T. Bennett, Revere Copper & Brass, Inc.
"Machine Gas Cutting in Railroad Work," by H. Bass, New York Central
"Welding of Railroad Rolling Stock," by V. R. Willoughby, American Car & Foundry Co.

A.A.R. Exhibit on Tour

The exhibit prepared jointly by the Railway Business Association and the Association of American Railroads for the annual conventions of the Railway Supply Manufacturers' Association and the Mechanical division and Purchases & Stores division of the association at Atlantic City,

in June, is now on display at Pennsylvania station, New York, whence it will be taken to various key cities for exhibition in railroad terminals and other large buildings. Representing the latest step in the comprehensive public relations program which the Association of American Railroads is carrying out, the exhibit takes the form of a huge showcase 40 ft. long and 10½ ft. high, containing a central panel eight ft. deep, which is flanked by six smaller panels, three on each side.

The smaller panels in order contain settings illustrating the following themes: (1) the railroad shopping list, (2) railroad purchases, (3) railroad taxes, (4) railroad safety, (5) railroad employment, (6) railroad progress. The central panel shows a three track railway complete with stations, signals, crossing gates, etc., along which model trains operate at intervals. A full description of the exhibit appeared in the *Railway Age* convention daily issue of June 22, page 1040D49.

Funds for Retirement Plan

President Roosevelt on July 1 signed the joint resolution, passed the same day by the Senate and the previous day by the House of Representatives, which carries for the fiscal year ended June 30, 1938, an appropriation to the railroad retirement account of $99,880,000 plus the account's unexpended balance of about $41,000,000. The Railroad Retirement Board is thus provided with funds for the administration of the pension plan which, as pointed out in the *Railway Age* of July 3, was embodied into law last week when the President signed the carriers' taxing act of 1937.

The Association of American Railroads this week issued a statement on the retirement plan, calling it the "most comprehensive" one in existence for any industry. The statement goes on to explain details of the set-up and the benefits which it provides for railway employees. It also explains the tax act and the method of computing retirement annuities. In closing the A.A.R. statement sketches briefly the court battles over the previous acts, adding that now parties to these suits, with the consent of the government, "have agreed upon orders, the effect of which is to dismiss the court proceedings as moot." This will enable the railroads to make the refunds provided in the tax act.

Unemployment Insurance Taxes

Commissioner of Internal Revenue Guy T. Helvering on July 1 advised "delinquent employers of eight or more engaged in railroad work" to make immediate tax returns as required under the provisions of Title IX of the social security act. He urged prompt action on the part of the carriers if they would "avoid further payment of drastic penalties which are now accruing."

Railroad and other employers subject to the railroad retirement act and carriers taxing act are exempt from the social security act's old-age pension taxes, but are subject to that act's Title IX taxes for unemployment insurance.

Commissioner Helvering pointed out that the latter went into effect on January 1, 1936, and tax payments were due from the employers, and the employers alone, at the office of the Collector of Internal Revenue on the first of this year. This tax is payable annually, although the employer may elect to pay it in regular quarterly installments.

"Penalties for delinquencies are levied against the employer," the Commissioner continued, "and range from 5 per cent to 25 per cent of the tax due, depending on the period of delinquency. Criminal action may be taken against those who willfully refuse to pay."

Freight Car Loadings

Revenue freight car loading for the week ended June 26 totaled 773,733 cars, an increase of 17,444 cars or 2.3 per cent above the preceding week, an increase of 60,145 cars or 8.4 per cent above the corresponding week in 1936 and 156,870 cars or 25.4 per cent above the corresponding week in 1935. All commodity classifications except coke showed increases over the preceding week, while all commodity classifications except coal, grain, and live stock showed increases over last year. The summary, as compiled by the Car Service Division, Association of American Railroads, follows:

Revenue Freight Car Loading

For Week Ended Saturday, June 26

Districts	1937	1936	1935
Eastern	155,283	151,665	142,153
Allegheny	157,714	140,600	126,166
Pocahontas	49,027	48,298	44,366
Southern	101,150	96,575	83,453
Northwestern	132,276	114,987	87,126
Central Western	119,584	105,606	86,219
Southwestern	58,699	55,857	47,380
Total Western Districts	310,559	276,450	220,725
Total All Roads	773,733	713,588	616,863
Commodities			
Grain and Grain Products	41,383	41,727	28,234
Live Stock	12,441	12,811	9,416
Coal	113,489	114,157	118,276
Coke	9,745	8,336	5,596
Forest Products	39,753	36,030	28,516
Ore	74,337	49,462	33,535
Merchandise L.C.L.	166,576	161,300	155,953
Miscellaneous	316,009	289,765	237,337
June 26	773,733	713,588	616,863
June 19	756,289	690,667	567,049
June 12	754,360	686,643	652,111
June 5	692,140	695,844	629,712
May 25	794,855	646,812	562,682
Cumulative Total, 26 Weeks	18,928,106	16,583,794	15,160,729

In Canada.—Car loadings for the week ended June 26 totaled 49,368, as against 45,740 in 1936 and 49,044 for the previous week, according to the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
June 26, 1937	49,368	26,280
June 19, 1937	49,044	26,543
June 12, 1937	47,917	26,656
June 20, 1936	45,740	22,172
Cumulative Totals for Canada:		
June 26, 1937	1,188,576	704,965
June 20, 1936	1,078,917	588,773
June 22, 1935	1,068,549	559,727

Santa Fe Affiliate Gets One of Five Highway Routes Sought

The Interstate Commerce Commission, Division 5, has authorized the Santa Fe Trail Transportation Company to acquire one out of five motor carrier routes which the Atchison, Topeka & Santa Fe's highway affiliate had sought. The motor carriers and routes involved were the Topeka-Emporia Truck Line between Topeka, Kan., and Emporia, 60 mi.; the Harris Freight Line between Oklahoma City, Okla., and Perry, 68 mi.; the Hewitt Truck Line between Enid, Okla., Ponca City and Blackwell, 90 mi.; the Burton Truck Line between Tulsa, Okla., and Bixby, 23 mi.; the Davis Transfer & Storage Company between Oklahoma City and Guthrie, Okla., 32 mi. Acquisition of the latter only was authorized.

In denying the application as to the first three the commission pointed out that the Santa Fe Trail Transportation Company already operates interstate over all the routes involved, and cited its decision in the case wherein it denied to the Union Pacific Stages authority to purchase a motor carrier route under similar circumstances. In the U. P. Stages case (Union Pacific Stages, Inc.—Purchase—Burns and Lamb) the commission stressed its duty to find, before granting the desired authority, that the "transaction proposed will promote the public interest by enabling" the railroad "to use service by motor vehicle to public advantage in its operations and will not unduly restrain competition." The latter aspect was found to "have particular application here as there is no point on any of these routes which is not now served by trucks operated by applicant."

In the Burton Truck Line case the decision says that "the evidence not only fails to show in what manner the railway proposes to use service by motor vehicle to public advantage in its operations, but the situation is also one falling within the scope of disapproved operations," as defined in recent Pennsylvania Truck Lines, Inc., decisions, "namely, invasion of territory already served by another rail carrier."

While the applicant also serves the Oklahoma City-Guthrie route it is authorized to acquire from the Davis Transfer & Storage Company, conditions were in that case found to be sufficiently different to justify the granting of authority for the acquisition.

Boston Roads to Levy "Dockage"

The New Haven and the Boston & Maine have decided, through their respective water terminal subsidiaries—the Boston Tidewater Terminal Company and the Mystic Terminal Company—to adopt a scale of dockage charges to be assessed against vessels utilizing railroad pier facilities at the port of Boston, Mass. Thorough study of wharfage fee practices at foreign and domestic ports revealed that, with the exception of Portland, Me., Baltimore, Md., Norfolk, Va., and Boston itself, dockage charges, in some form or other, are levied generally at United States ports and at all European ports.

The Boston Port Authority had already rejected a scale of charges based on the net registered tonnage of vessels, proposed

for all United States ports in 1935 by Commissioner Joseph B. Eastman, as federal co-ordinator of transportation, on the grounds that its application would result in diversion to New York of large ships which customarily call at Boston to take on or unload a portion of their cargoes, since it would then be more economical to carry on all loading at the larger port, absorbing, if necessary, overland transportation charges of New England shipments. The terminal companies in question, therefore, intend to base dockage fees on the schedule in effect for the last ten years at the Commonwealth pier, which is operated by the Boston department of public works.

Gerrit Fort, president of the Mystic Terminal Company, in a statement concerning the proposed charges, points to the findings of Mr. Eastman, as commissioner of the Interstate Commerce Commission, pertaining to dockage fees at railroad-owned pier facilities, in which the commissioner states that the failure of the carriers at Atlantic and Gulf ports to make separate charges for wharf privileges "is a bit of improvidence originating in the competition of the railroads among themselves and which has matured into a fixed custom largely through the inertia caused by the ability of the carriers to make good this improvidence at the expense of traffic in general." Mr. Fort goes on to show that the operating expenses of Mystic Terminal in the first five months of 1937 constitute a 57.4 per cent increase over the corresponding period of 1936, while gross income increased only 26.2 per cent during the same period. In addition he quotes $61,900 as the estimated cost of major physical improvements (not charged to operating expenses of the Mystic Terminal Company) to the pier facilities for April to September of 1936, inclusive, to be borne by the Boston & Maine, as the parent company.

The plan of proposed charges will affect all of the public piers at Boston capable of accommodating overseas vessels, except the city pier, which already assesses fees, as stated above, and the facilities owned by the Boston & Albany, which handle a specialized traffic not considered part of the general cargo class.

House Passes Rivers and Harbors Bill

Criticism of Interstate Commerce Commission rate policies, attacks on the railroads and tributes to the efficiency of the board of army engineers marked the debate on the rivers and harbors bill (H.R. 7051) which was passed by the House of Representatives on July 1. The bill—the first measure of its kind in two years—authorizes the improvement of some 120 projects at a cost of about $30,000,000, which is to be provided in future appropriations.

The work contemplated by the bill was characterized by Representative Mansfield of Texas, chairman of the House committee on rivers and harbors as "urgent and necessary in the systematic movement of our great and ever-growing commerce." He went on to trace the history of waterway improvements which "have now been carried on for more than a century," and which have involved expenditures of $2,046,419,384.93, not including flood control." Representative Dondero of Michigan, a minority member of the committee, spoke briefly to point out that the present bill contemplates a smaller outlay than any rivers and harbors bill since 1920, the reason being that many waterway projects have had funds allocated to them by specific appropriations and by relief agencies. The 1935 bill, the last rivers and harbors project, he added, carried $660,000,000 in authorized projects.

Expressions of hope that a treaty for the construction of the St. Lawrence seaway would soon be approved led to the discussions of Interstate Commerce Commission and railroad policies. Representative Culkin of New York wanted to call attention to the fact that "for the past several years there has been a nationwide effort through various types of lobbying, perhaps none of it yet venal, to write off and destroy water transportation in fact and in the minds of the people." He went on to speak of "subsidized economists" and to cite I.C.C. decisions which cause him to "wonder sometimes just who the Interstate Commerce Commission thinks it serves . . . if it thinks it has a definite direction from Congress to destroy water or other types of transportation by raising the rate up to the rail rate, and whether or not it considers the fact it is a representative of the people."

Further talk along these lines drew from Mr. Culkin the expression of his opinion that "Congress took a definite step back and went back half a century when it passed the Pettengill bill." Also, he thinks that railroad valuations under the La Follette act were "synthetic," it being his view that a valuation of the roads "would be very high at $18,000,000,000."

Amidst the subsequent discussion by various members of their favorite waterway projects Representative Green of Florida put in a few words for the Florida ship canal which is dealt with in a separate bill now pending in the House. He brought up the land grants to railroads, presenting figures designed to show that Florida was "exceedingly liberal" in thus allocating about one-third of its land. While conceding that railroad development has "meant much" to Florida's economic life Mr. Green nevertheless thought that the railroads "could hardly have the nerve to come in and oppose waterway transportation facilities in Florida."

After further discussion on the "merits" of rivers and harbors projects and their capacity for employing labor, and the adoption of committee amendments, the bill was passed.

TIMBER CONNECTORS.—The Timber Engineering Company, Washington, D. C., has issued an eight page bulletin that demonstrates the use of devices to facilitate the transfer of stresses in the joints of wood structures. It is illustrated with pictures of the connectors, sketches showing methods of application and views of railway structures in which they have been used.

Construction

ATLANTIC COAST LINE.—This road has applied to the Interstate Commerce Commission for authority to construct a 2.6-mi. extension of its Acme (N. C.) branch.

BOSTON & MAINE-CENTRAL VERMONT.—A contract has been let to the Aberthaw Company, Boston, Mass., for the construction of a joint passenger station for the use of the Boston & Maine and the Central Vermont at White River Junction, Vt., to cost about $60,000.

CANADIAN NATIONAL.—Bids will be received by W. U. Appleton, vice-president and general manager, Moncton, N. B., up to 12 o'clock noon, Monday, July 19, for terminal facilities at South Devon, N. B., to include the construction of a modern 90-ft. seven stall frame engine house with concrete foundations, and machine shop fully equipped and boiler room. In addition, an 83-ft. steel turntable, with concrete foundations, stores' building, enginemen's bunkhouse, and an ice house, will be provided.

DELAWARE & HUDSON.—A contract has been given to S. A. Scullen, Inc., for work in connection with the elimination of the Hamilton street and Corinth station crossings of this road at Corinth, N. Y., to cost about $95,000.

NEW YORK CENTRAL.—Contracts have been let for construction work in New York City as follows: To W. J. Fitzgerald, New York, for paving the express highway, etc., from West 79th to West 195th streets; to the Bouker Construction Corp., New York, for the construction of riprap wall from West 107th to West 117th streets; to the John W. Ryan Corp., New York, for the construction of four relay rooms and feeder duct lines, etc., at West 151st street and Dyckman street; to Hoffman & Elias, Inc., New York, for electric wiring and lighting facilities and fire alarm cable system of the express highway, from West 79th to West 105th streets. A contract has been given to the Duffy Construction Corporation, New York, for the construction of a mechanical coaling plant, etc., at Dewitt engine terminal, Syracuse, N. Y., and a contract has been let to the C. B. Moon Company, Cleveland, Ohio, for the elimination of the Ontario street grade crossing, Tonawanda, N. Y.

PENNSYLVANIA.—A contract has been given to W. F. Trimble & Sons Company, Pittsburgh, Pa., for the construction of a banana house at Pittsburgh, to cost about $75,000.

READING.—A contract has been let to A. A. White, Inc., Lebanon, Pa., for grading and masonry and to the Phoenix Bridge Company, Philadelphia, Pa., for the steel superstructure, in connection with the reconstruction of Bridge No. 34/24 on the line of Clear Spring road, west of Annville station, in North Anville Township, Lebanon county, Pa., to cost $33,562. See *Railway Age*, May 15, page 843.

Equipment and Supplies

First Half Orders Presage Good Year

Six months' equipment purchase record stands high despite recent decline

June orders for 22 locomotives, 528 freight cars and 10 passenger-train cars swell the six months' totals in domestic buying to 228 locomotives, 45,090 freight cars and 456 passenger-train cars, which exceed in each class of equipment the entire 12-month totals of 1931 to 1935, inclusive. In addition, on July 3, there were contemplated purchases of 5 steam and 13 Diesel-electric locomotives, 1,265 freight cars, and 20 passenger-train cars (including one rail motor unit), for a part of which inquiries are already outstanding.

While June purchases of 22 locomotives —12 steam, 4 Diesel-electric, and 6 line-propelled electric—constitute a slight decrease under the 24 orders placed in June of last year, they reveal a considerable resurgence of locomotive buying since May, when 14 units were bought. Company shops divided the month's motive power field equally with commercial builders. Orders for 20 locomotives for use in China bring the export trade figures for the first half of the year to 41 units.

The 528 freight cars placed on the books in June compare most unfavorably with the 3,903 cars ordered in May and are approximately 12 per cent of the 4,320 cars ordered in June of 1936.

June orders for 10 passenger-train cars are an increase over the 8 cars placed on order in the preceding month but are a 50 per cent decline from the 20 units ordered in June of 1936. The six months' total of 456 cars, however, is a tremendous gain over the 147 total for the corresponding period of 1936. Canadian car builders received orders for 10 mail and express cars in June, bringing their six-months' total to 90 units.

The rail market continued dull during June; only 10,000 tons were ordered, bringing the six-months' total to 65,017 tons.

Domestic Equipment Orders Reported In Issues Of The Railway Age In June, 1937

LOCOMOTIVES

Date	Name of Company	No.	Type	Builder
June 5	Norfolk & Western	10	2-8-8-2	Company Shops
June 5	Chicago & Northwestern	1	4-6-4	American Locomotive Co.
June 5	East Erie Commercial Railroad	1	Diesel-electric switching	General Electric Co.
June 5	Pennsylvania	1	4-4-4-4	Company Shops
June 12	Canton Railroad Co.	1	Diesel-electric	Electro-Motive Corp.
June 12	New York, New Haven & Hartford	6	2-C-C-2 Electric	General Electric Co.
June 26	Baltimore & Ohio	2	Diesel-electric	Electro-Motive Corp.

FREIGHT CARS

June 5	Norfolk & Western	20	Caboose	Company Shops
		10	Cov. Hopper	Company Shops
June 12	Union Pacific	188	Box	Company Shops
June 19	Seaboard Air Line	200	Auto Box	Pullman-Standard
June 19	U. S. Sugar Corp.	60	Cane	Magor Car Corp.
June 26	Owens-Illinois Glass Co.	50	Hopper	General American

PASSENGER-TRAIN CARS

June 5	Chicago, Rock Island & Pacific	10	Coaches	Pullman-Standard

LOCOMOTIVES

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC has placed an order with company shops for the construction of one 4-8-4 type oil-burning locomotive. Court authorization for the purchase of this equipment was reported in the *Railway Age* of July 3.

FREIGHT CARS

THE UTAH COPPER COMPANY is inquiring for three caboose cars of 30 tons' capacity.

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC has placed an order in company shops for 1,000 70-ton gondola cars. Court authorization for the purchase of this equipment was reported in the *Railway Age* of July 3.

THE CANADIAN NATIONAL has ordered 30 sand cars from the National Steel Car Corporation, Hamilton, Ont.

PASSENGER CARS

THE BOARD OF TRANSPORTATION, CITY OF NEW YORK, is asking for bids until 11:30 a. m., daylight saving time, July 27, for 100 steel passenger cars for subway service.

SIGNALING

THE SOUTHERN PACIFIC COMPANY has ordered 110 complete sets of continuous cab signal and automatic train control equipment from the Union Switch & Signal Co., for installation on the multiple unit cars which will operate over the San Francisco-Oakland Bay bridge between Oakland, Cal., and San Francisco. These are for four-indication cab signal operation, without wayside signals, over the double bridge track, with four operating speed limits (35, 25, 17, and 11 m.p.h.) arranged to correspond to the four cab signal aspects. Complete speed control will be provided with automatic emergency braking in the event of failure on the part of the motorman to control the speed of his train in accordance with the set speed limits. Automatic cutout of speed control equipment when leaving the bridge territory is being arranged for by using a distinctive code frequency for accomplishing this cutout, while automatic cut-in of the speed control equipment when the trains re-enter the train control territory at approaches to the east end of the bridge is being provided. The various equipment is being applied to the cars by the railroad company's forces at its Alameda shops, Alameda, Cal.

Supply Trade

Everett D. Graff, first vice-president of **Joseph T. Ryerson & Son, Inc.,** Chicago, has been elected president; **W. F. Kurfess** and **V. H. Dieterich,** assistant vice-presidents, have been elected vice-presidents, and **Ainslie Y. Sawyer,** assistant vice-president, has been promoted to assistant to the president, as announced in the *Railway Age* of July 3.

Everett D. Graff

W. F. Kurfess

Mr. Graff, who has been with the Ryerson Company for 31 years, was born at Clarinda, Ia., on August 7, 1885, and was

graduated from Lake Forest College in 1906, at which time he entered the employ of the Ryerson Company. He was elected vice-president in 1928.

Mr. Kurfess attended the U. S. Naval

V. H. Dieterich

Academy at Annapolis, was graduated from Purdue University, and was a member of the first officers' training class at Annapolis, at the beginning of the World War. Later he was a lieutenant aboard the *U. S. S. Porter* in active destroyer duty off England and France. He entered the structural engineering department of the Ryerson company in 1912 and has held several positions leading up to his present responsibility.

Mr. Dieterich has been with the company for 32 years. Mr. Sawyer has been with the Ryerson company for 29 years and has served in almost every division of the sales department, holding the positions

Ainslie Y. Sawyer

of manager of the Export Materials Department and manager of the Cold Finished Steel Division.

The Consolidated Ashcroft Hancock Company, Inc., on July 1, was dissolved and absorbed by the parent corporation, **Manning, Maxwell & Moore, Inc.,** New York. Effective the same date, the Railway Sales Division of the Consolidated Ashcroft Hancock Company, Inc., began operation as the Locomotive Equipment Division of Manning, Maxwell & Moore, Inc. This change affects only the operating details of the corporation. Manning, Maxwell & Moore, Inc., has always been the sole owner of the Consolidated Ashcroft Hancock Company, Inc.

D. W. Lamoreaux, vice-president of the **Peerless Equipment Company,** Chicago, has been elected president to succeed A. A. Helwig, resigned. Mr. Lamoreaux was born at Allandale, Ont., in 1887 and entered railway service as a machinist apprentice for the Wheeling & Lake Erie at Norwalk, Ohio. Later, he was promoted to round house foreman at Brewster, and after holding this position for several years, entered the employ of the Pennsylvania and later the New York Central, where he worked as a machinist. He returned to the Wheeling & Lake Erie as general foreman and several years later resigned to become sales engineer for the National Refining Company, with which company subsequently he was promoted to division manager of sales. He held the

D. W. Lamoreaux

latter position until 1930, when he was elected vice-president of the Journal Box Servicing Corporation at Indianapolis, Ind. Two years later he was placed in charge of this company's Chicago office. In May, 1937, he resigned to become vice-president of the Peerless Equipment Company.

G. O. Hauskins, sales representative of the **Peerless Equipment Company,** with headquarters at New York, has been transferred to Chicago.

Frank T. Sheets, consulting engineer and director of development for the **Portland Cement Association,** Chicago, has been elected president to succeed **Edward J. Mehren,** retired.

H. J. Mauderer has been elected auditor of the **Westinghouse Electric International Company,** with headquarters at New York. Mr. Mauderer joined the Westinghouse organization in 1920 and since April, 1924, has served as assistant auditor of the company.

W. E. Knox, assistant to general manager of the **Westinghouse Electric International Company,** New York, has been promoted to assistant general manager. Mr. Knox joined the Westinghouse organization in 1921, immediately after his graduation from the University of New Hampshire with a B.S. degree in electrical engineering. After taking the Westinghouse student course at East Pittsburgh, Pa., he entered the Westinghouse Electric International Company in 1922, and for a number of years he was engaged in sales-engineering work, specializing in power apparatus and in oil field equipment. In 1932, Mr. Knox was appointed assistant to general manager, which position he held until his recent promotion.

Francis Leslie and **U. V. Westover** have been appointed sales engineers in the New York territory, with headquarters in the Empire State building, New York, for P. & H. Smootharc welders and weld rods, manufactured by the **Harnischfeger Corporation,** Milwaukee, Wis.

OBITUARY

Walter Cary, vice-president of the Westinghouse Electric & Manufacturing Co., died suddenly on July 2, from a heart attack at his home in New York City. He was born at Milwaukee, Wis., on April 26, 1871, and educated at the Milwaukee High School and at Harvard University, from which he was graduated with the degree of A.B. in the class of 1893. Soon after graduation, he became associated with the Gibbs Electric Company, Milwaukee, and served as secretary from 1894 to 1898. Early in 1899, he helped organize the Milwaukee Electric Company for the manufacture of dynamos and motors, becoming its vice-president of organization and later its president in 1902. In 1904, he entered the service of the Westinghouse Lamp Company, of which he soon became vice-president and general manager and later president. In June,

Blank & Stoller

Walter Cary

1917, Mr. Cary was elected a vice-president of the Westinghouse Electric & Manufacturing Co., while still retaining his position as vice-president, and then as president of the Westinghouse Lamp Company. He later became president of the Bryant Electric Company, and also president of the Westinghouse X-Ray Company, both of which companies are wholly owned by the Westinghouse Electric & Manufacturing Co.

Financial

ATCHISON, TOPEKA & SANTA FE.—*Merger of Highway Affiliates.*—Six highway affiliates of this road have filed with the Interstate Commerce Commission for a joint application authority to merge their properties under section 213 of the motor carrier act. The companies involved are: Santa Fe Trail Transportation Company; Santa Fe Trail Stages, Inc.; Central Arizona Transportation Lines, Inc.; Cardinal Stage Lines Company; Rio Grande Stages, Inc.; Western Transit Company. The application contemplates that all will be merged into the Santa Fe Trail Transportation Company, and contends that "the corporate simplification and unification" will result in "improved service and economies in operation." It is pointed out that while all six applicants now function as a single system it has been found that the necessity for maintaining intercorporate relationships of one kind or another "prevents complete unification and co-ordination of operations." Also, it is urged, the proposed set-up would facilitate the coordination of operations with rail services of the parent railroad.

CENTRAL OF NEW JERSEY.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to sell or pledge $1,174,000 of general mortgage bonds.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—*Reorganization.*—The Interstate Commerce Commission has postponed from July 27 to September 21 the hearings on this road's reorganization plan. In another order the commission has authorized the solicitation of proxies by Reese D. Alsop, Lemuel H. McHenry, Elmer W. Stout and Westmore Willcox, as a protective committee for holders of the road's first and general mortgage bonds, due May 1, 1966.

CLEVELAND & MAHONING VALLEY.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $2,936,000 of first mortgage four per cent bonds to meet the January 1, 1938, maturity of a like amount of its five per cent 50-year gold bonds. Subject to the approval of the commission it is proposed to sell the new bonds to the Metropolitan Life Insurance Company.

DENVER & RIO GRANDE WESTERN.—*Abandonment.*—Trustees of this road have applied to the Interstate Commerce Commission for authority to abandon the 25.49-mi. line between Texas Creek, Colo., and Westcliffe.

DULUTH, MISSABE & NORTHERN.—*Consolidation.* — The Interstate Commerce Commission, Division 4, has authorized this company and the Spirit Lake Transfer to consolidate into one company for ownership, management, and operation.

DULUTH, MISSABE & IRON RANGE.—*Securities.*—The Interstate Commerce Commission, Division 4, has authorized this company to issue $4,112,500 of common stock, consisting of 41,125 shares with par value of $100 a share, and to assume obligation for $1,000,000 of first mortgage 5 per cent bonds of the Spirit Lake Transfer and $3,780,000 of equipment stock certificates of the Duluth, Missabe & Northern. The financing is in connection with the consolidation of the two latter companies into the applicant corporation.

MISSOURI PACIFIC.—*Separate Trustees for Subsidiaries.*—A rehearing of the petition of committees representing holders of first mortgage and income bonds of the New Orleans, Texas & Mexico and the Gulf Coast Lines for the appointment of a separate trustee in the reorganization proceedings of the Missouri Pacific has been set for October 5 by the federal district court at St. Louis.

NEW YORK CENTRAL.—*Bond Conversion.*—Of the original amount, $59,911,100, of 10-year six per cent convertible bonds of this company due May 10, 1944, a total of $58,699,300 had been turned in for conversion, when the conversion privilege ended June 30. The $1,211,800 outstanding will be redeemed at 102 per cent, with interest to June 30. The company has also called for redemption, at 105, Series D, Big Four, 5 per cent mortgage bonds in the amount of $20,772,150; Series C, 6 per cent Big Four mortgage bonds, at 103, in the amount of $1,084,178; Kanawha & West Virginia first mortgage 5's, at 105, in the amount of $1,550,850. It also has paid $1,000,000 on Boston & Albany 4½ per cent improvement bonds of 1912, which matured July 1.

NEW YORK, SUSQUEHANNA & WESTERN.—*Ratification of Trustees.*—Walter Kidde and Hudson J. Bordwell have applied to the Interstate Commerce Commission for ratification of their appointments as trustees of this company.

NEW YORK, WESTCHESTER & BOSTON.—*Receivership.* — This company, which has been in trusteeship, was on June 28 transferred by the federal court at New Haven, Conn., to an equity receivership, with the probability that jurisdiction may be transferred to the federal court for the Southern District of New York.

NEW YORK, SUSQUEHANNA & WESTERN.—*Trustees.*—The federal court at Newark, N. J., has named Walter Kidde, consulting engineer of Montclair, N. J., and H. J. Bordwell, of Jersey City, as trustees of the property of this company for reorganization under the federal bankruptcy act.

TEXAS & NEW ORLEANS.-ST. LOUIS SOUTHWESTERN-ST. LOUIS SOUTHWESTERN OF TEXAS.—*Joint Operation.*—The Interstate Commerce Commission, Division 4, has issued an order authorizing operation (1) by the Cotton Belt of Texas over the line of the T. & N. O., 11,198 ft., and by the latter over the line of the former, 6,961 ft., in Sherman, Tex.; (2) by the Cotton Belt of Texas over the line of the T. & N. O., 11,772 ft., and by the latter over the line of the former, 14,237 ft., in Lufkin, Tex.; (3) by the Cotton Belt of Texas over the line of the T. & N. O., 19,336 ft., and by the latter over the line of the former, 30,298 ft., in Waco, Tex.; (4) by the Cotton Belt of Texas over the line of the T. & N. O., 8,750 ft., and by the latter over the line of the former, 18,178 ft., in Corsicana, Tex.; (5) by the Cotton Belt of Texas over the line of the T. & N. O., 3,084 ft., and by the latter over the line of the former, 3,839 ft., in Greenville, Tex.; (6) by the Cotton Belt of Texas over the line of the T. & N. O., 1,000 ft., and by the latter over the line of the former, 593 ft., in Ausk, Tex.; and (7) by the Cotton Belt over the line of the T. & N. O., 21,500 ft., and by the latter over the line of the former, 22,980 ft., in Shreveport, La.

Average Prices of Stocks and Bonds

	July 6	Last week	Last year
Average price of 20 representative railway stocks..	52.37	48.97	48.81
Average price of 20 representative railway bonds..	79.81	77.45	79.29

Dividends Declared

Carolina, Clinchfield & Ohio.—$1.00, quarterly; Stamped Certificates, $1.25, quarterly, both payable July 20 to holders of record July 10.

Cleveland, Cincinnati, Chicago & St. Louis.—$5.00; 5 Per Cent Preferred, $1.25, quarterly, both payable July 31 to holders of record July 21.

Michigan Central.—$25, semi-annually, payable July 31 to holders of record July 21.

Philadelphia & Trenton.—$2.50, quarterly, payable July 10 to holders of record July 1.

Piedmont & Northern.—75c, quarterly, payable July 10 to holders of record June 30.

West New York & Pennsylvania.—$1.50, semi-annually; 5 Per Cent Preferred, $1.25, semi-annually, both payable July 1 to holders of record June 30.

* * * *

Diesel-Hydraulic Rail-Car on Austrian Federal Railways

Railway Officers

EXECUTIVE

Jesse McDonald, an attorney and a director of the St. Louis-San Francisco, has been elected president to fill the vacancy which has existed since **James M. Kurn** resigned in November, 1932, to become co-receiver when the road passed under the jurisdiction of the district court in accordance with the amended bankruptcy act. Mr. Kurn will continue in charge of operations.

FINANCIAL, LEGAL AND ACCOUNTING

The Interline and local freight accounting offices of the New York Central have been consolidated, with headquarters at Detroit, Mich., effective July 1. **W. J. Daeschner** has been appointed auditor freight accounts, and **T. W. Meyer,** auditor local freight accounts, has been appointed assistant auditor freight accounts, with headquarters at Detroit. **E. F. Haubold,** auditor Interline freight accounts, has retired from active duty after 53 years of service.

T. A. Thompson has been appointed general auditor of the Denver & Rio Grande Western, with headquarters at Denver, Colo., to succeed **John F. Morris,** who has retired, effective July 1. **D. A. Barton,** auditor freight and passenger receipts, has also retired. Coincident with these changes the following appointments have been made: **H. F. McCarthy** and **E. J. Hennessy,** assistants to general auditor; **W. A. Stidham,** auditor of freight receipts; and **A. H. McCune,** auditor of passenger and car service accounts. All these officers are located at Denver.

OPERATING

T. C. Stiegler has been appointed supervisor divisional expenditures of the New York zone of the Pennsylvania, with headquarters at New York, succeeding **L. E. Thompson,** transferred.

E. P. Dudley, trainmaster on the New Mexico division of the Atchison, Topeka & Santa Fe with headquarters at Las Vegas, N. M., has been appointed acting superintendent of the Colorado division with headquarters at Pueblo, Colo., to succeed **J. C. Barton,** who has been granted a leave of absence because of ill health. **J. E. Lester,** chief dispatcher at Amarillo, has been promoted to trainmaster at Slaton, N. M., to succeed **F. A. Baker,** who has been transferred to the Pecos division, to replace **J. F. Carder,** who has been transferred to the New Mexico division with headquarters at Las Vegas, to succeed Mr. Dudley.

Edward H. Friberg, whose appointment as superintendent of telegraph of the Northern Pacific, with headquarters at St. Paul, Minn., was reported in the *Railway Age* of June 26, was born on August 29, 1882, at Clear Lake, Wis. After a public school education he entered railway service on June 1, 1900, as an operator on the Chicago, St. Paul, Minneapolis & Omaha.

Edward H. Friberg

Mr. Friberg severed his connection with this company on March 20, 1901, re-entering railway service with the Northern Pacific on July 10 of the same year as a telegraph operator on the Seattle division. Four years later he was promoted to train dispatcher and in 1914 he was further advanced to night chief dispatcher. On August 6, 1916, Mr. Friberg was promoted to chief dispatcher and on March 1, 1925, he was made trainmaster of the Pasco division (now the Idaho division), with headquarters at Yakima, Wash. On April 1, 1929, he was further elevated to the position of assistant to general superintendent, being appointed assistant division superintendent of the Tacoma division, with headquarters at Tacoma, Wash., on July 1, 1930. He was holding the latter position at the time of his appointment as superintendent of telegraph, which became effective on June 1.

J. M. MacArthur, who has been appointed general manager of the Northern Alberta, with headquarters at Edmonton, Alta., as reported in the *Railway Age* of

J. M. MacArthur

June 26, was born in Toronto, Ont., and first entered railway service in 1902 as a clerk on the Canadian Pacific at Toronto. After serving in clerical capacities at various points, Mr. MacArthur was appointed chief clerk to the terminal superintendent at Toronto, and later served as assistant chief clerk to the general superintendent. In 1909 he was sent to Winnipeg, Man., as chief clerk to the second vice-president, serving in this capacity and as chief clerk to the general superintendent at Winnipeg until 1913, when he was promoted to assistant superintendent at Medicine Hat, Alta. During the ensuing three years Mr. MacArthur served as assistant superintendent and acting superintendent at various points. At the end of this period he was advanced to superintendent, holding this position at Kenora, Ont., Medicine Hat, Regina, Sask., and Vancouver, B. C. He was located at the latter point at the time of his recent appointment as general manager of the Northern Alberta, which was effective on July 1.

TRAFFIC

William J. Black, passenger traffic manager of the Atchison, Topeka & Santa Fe, with headquarters at Chicago, whose retirement was reported in the *Railway Age* of July 3, was born on October 3, 1864, at St. Louis, Mo. Mr. Black studied

William J. Black

at Christian Brothers college, St. Louis, Mo., and entered railway service in 1879 with the Vandalia (now part of the Pennsylvania), with which company he served as an office boy, ticket clerk and rate clerk. In 1884 he left this company to go with the Missouri Pacific as a rate clerk at St. Louis. In the following year he accepted a similar position with the Santa Fe at Topeka, Kan., and after two years he was advanced to chief clerk. In 1892 Mr. Black became assistant general passenger agent and after five years in this capacity he was advanced to general passenger agent. He has served as passenger traffic manager since 1905.

C. R. Chesney has been appointed district passenger agent of the Wabash with headquarters at Atlanta, Ga.

N. R. Lehmann, commerce agent for the Norfolk & Western, has been appointed assistant general freight agent, with headquarters as before at Roanoke, Va., succeeding **A. C. Dunlap,** deceased.

ENGINEERING AND SIGNALING

J. W. Orrock, whose retirement as engineer of buildings of the Canadian Pacific at Montreal was noted in the *Railway Age* of July 3, has had 46 years of service with this road. He entered the service of the Canadian Pacific in July, 1891, as draughtsman in the chief engineer's office at Montreal. In 1910 he became chief draughtsman and assistant engineer in the same office and in March, 1912, division engineer at North Bay, Ont. He later was promoted to principal assistant engineer at Montreal and became engineer of buildings in May, 1924, from which position he has retired, effective June 30.

A. R. Ketterson, whose promotion to engineer of bridges of the Canadian Pacific at Montreal, Que., was noted in the *Railway Age* of July 3, received his general and technical education in Scotland. Shortly after graduating in civil engineering at Glasgow, he entered the service of the Canadian Pacific as inspector on con-

A. R. Ketterson

struction of bridges at Montreal. He was later assistant engineer at Montreal, and for a time served in the same capacity on the western lines at Winnipeg. After service in the World War, Mr. Ketterson returned to the service of the C. P. R. as assistant engineer at Montreal and was appointed assistant engineer of bridges in May, 1928, the position he held until his recent promotion to engineer of bridges.

N. B. Reardon, whose promotion to engineer of buildings of the Canadian

N. B. Reardon

Pacific at Montreal, Que., was noted in the *Railway Age* of July 3, was graduated from Cornell University in 1905 with the degree of civil engineer. After graduation he took part in the construction of the Rockefeller Hall of Physics and the Goldwin Smith Hall at Cornell University and was employed in the construction of schools and private residences in the United States. Mr. Reardon entered the service of the Canadian Pacific in 1912 as a civil engineer in the building construction department at Montreal and has been active in the development and construction of every important building and hotel since that date. He became assistant to the superintendent of building construction in 1914 and in 1917 was appointed assistant engineer of buildings in the chief engineer's office, holding that position until his recent promotion to engineer of buildings.

PURCHASES AND STORES

R. D. Long, purchasing agent of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been appointed also general purchasing agent of the Colorado & Southern, the Fort Worth & Denver City and the Wichita Valley, all of which are subsidiaries of the Burlington.

S. Sneddon, assistant general storekeeper for the Canadian National, with headquarters at Winnipeg, Man., has been appointed general storekeeper of the central region, with headquarters at Toronto, Ont., succeeding **E. D. Toye,** deceased. **C. S. Argyle,** district storekeeper at Transcona, Man., has been appointed assistant general storekeeper at Winnipeg. **J. S. Park,** district storekeeper at Edmonton, Alta., has been transferred in the same capacity to Transcona. **E. A. Russell,** district storekeeper at Saskatoon, Sask., has been transferred in the same capacity to Edmonton. **J. B. Fraser,** storekeeper at Point St. Charles, Montreal, has been appointed district storekeeper at Saskatoon. **W. C. Howard,** chief clerk at Montreal, has been appointed storekeeper at Point St. Charles, succeeding Mr. Fraser.

SPECIAL

E. H. McReynolds, director of publicity and advertising of the Missouri Pacific, has resigned effective June 30, to become vice-president in charge of sales of the James Mulligan Printing & Publishing Co., St. Louis. He is a past president of the Advertising Federation of America and now is chairman of its board. He entered the employ of the Missouri Pacific in 1923.

OBITUARY

William C. McCormick, general passenger agent of the Louisiana lines of the Southern Pacific, with headquarters at New Orleans, La., died of heart failure in that city on July 2.

Joseph F. McAuley, division storekeeper on the Southern Pacific, with headquarters at Portland, Ore., died suddenly of a heart attack on June 21 while working at his desk.

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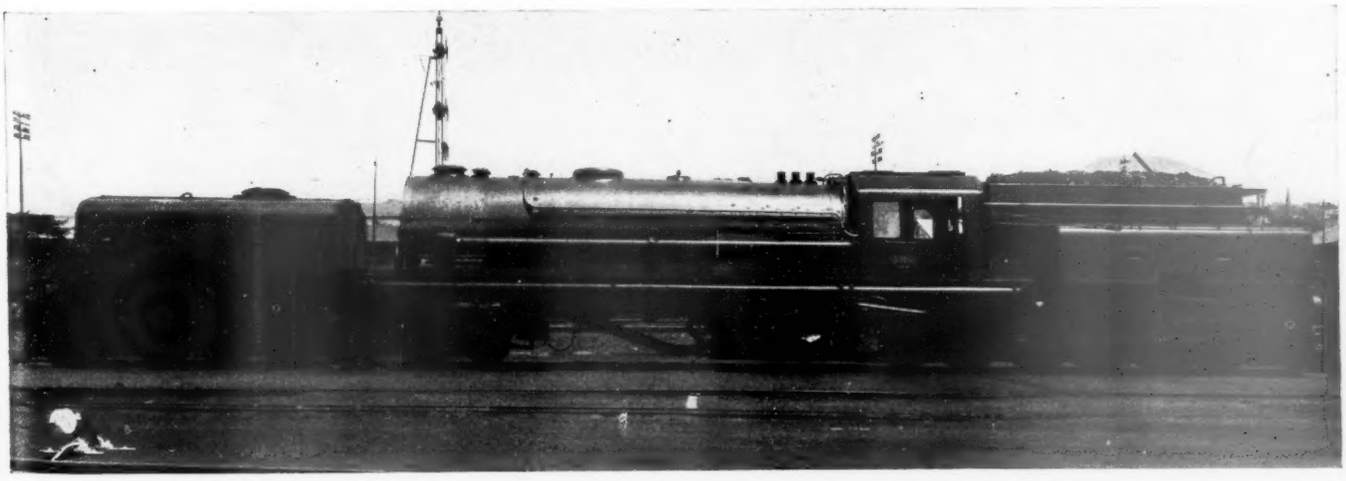

Photo by South African Railways & Harbors

This Garratt Articulated Locomotive Represents the Heaviest Type of Motive Power on the 3 Ft. 6 In. Gage South African Railways

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1937

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures	Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depreciation: 1937	1936	Before depreciation
Akron, Canton & Youngstown	May	171	$172,848	$46	$184,315	$28,396	$16,458	$10,408	$56,411	$120,055	65.1	$64,260	$50,044	$27,601	$39,406	$32,254
	5 mos.	171	909,295	194	965,909	135,380	84,572	47,736	284,110	600,150	62.1	365,759	289,518	170,775	198,826	192,601
Alton	May	956	962,911	194,086	1,355,058	238,434	231,788	49,292	526,649	1,113,804	82.2	241,254	135,025	—30,440	—38,077	—1,109
	5 mos.	956	4,895,893	952,723	6,797,846	766,150	1,026,060	245,321	2,597,231	4,977,037	73.2	1,820,809	1,291,893	470,452	—24,554	616,960
Atchison, Topeka & Santa Fe System	May	13,561	10,851,273	1,383,266	13,418,516	2,570,050	3,321,369	490,256	5,055,153	11,886,016	88.6	1,532,500	415,347	424,501	—139,487	1,365,369
	5 mos.	13,462	53,479,883	6,758,777	65,801,388	9,249,044	15,738,222	2,218,309	24,907,032	54,466,311	82.8	11,335,077	5,269,766	5,171,628	1,947,531	9,853,570
Atlanta & West Point	May	93	100,512	24,771	147,544	17,858	29,626	9,142	61,870	129,042	87.5	18,502	9,315	—4,915	—8,260	3,668
	5 mos.	93	526,612	125,474	773,683	99,159	166,038	43,605	306,926	672,234	86.9	101,449	55,211	—14,137	—19,440	29,188
Western of Alabama	May	133	103,635	23,796	143,940	13,571	36,297	8,140	52,373	120,130	83.5	23,810	11,881	12,241	—7,176	24,424
	5 mos.	133	505,076	123,280	716,506	97,430	181,183	39,159	265,328	633,635	88.4	82,871	23,380	32,760	—1,884	94,181
Atlanta, Birmingham & Coast	May	639	266,453	7,758	312,118	52,175	54,509	25,025	121,076	283,056	90.7	29,062	7,411	—10,650	—16,568	535
	5 mos.	639	1,375,285	124,273	1,668,125	254,926	276,406	119,933	625,429	1,411,012	84.6	257,113	149,321	45,983	—24,250	102,187
Atlantic Coast Line	May	5,102	3,062,539	508,866	4,023,322	420,135	766,564	135,431	1,545,816	3,045,219	75.7	978,103	528,103	333,224	67,312	501,913
	5 mos.	5,102	16,544,120	4,746,024	23,700,544	2,077,516	3,872,856	728,325	8,429,930	16,177,067	68.3	7,523,477	4,698,477	3,777,941	2,119,313	4,627,838
Charleston & Western Carolina	May	342	225,100	1,170	233,386	26,185	35,520	7,840	68,718	144,183	61.8	89,203	71,203	63,386	41,890	69,586
	5 mos.	342	1,080,760	5,542	1,115,983	143,060	161,348	35,608	349,261	715,712	64.1	400,271	287,771	251,723	187,364	282,758
Baltimore & Ohio	May	6,471	13,287,174	982,923	15,164,876	1,635,328	3,769,846	433,077	5,162,672	11,717,326	77.3	3,447,550	2,650,979	2,255,521	2,472,966	2,858,036
	5 mos.	6,471	64,920,371	4,382,712	73,507,045	6,895,982	17,066,411	2,034,114	25,267,829	54,756,414	74.5	18,750,631	13,705,312	11,744,242	9,636,365	14,754,574
Staten Island Rapid Transit	May	23	44,013	77,268	125,122	8,623	19,931	1,757	80,865	123,141	98.4	1,981	—19,619	—25,341	—31,382	—17,923
	5 mos.	23	271,249	343,341	651,769	59,467	112,000	9,108	410,856	652,878	100.2	—1,109	—109,109	—144,755	—185,038	—107,665
Bangor & Aroostook	May	603	609,731	13,518	644,882	102,476	82,217	5,842	132,110	348,567	54.0	296,315	225,718	220,335	133,580	242,437
	5 mos.	603	3,162,252	115,688	3,381,594	450,716	461,512	27,960	757,002	1,832,897	54.2	1,548,697	1,195,749	1,113,439	889,995	1,224,129
Bessemer & Lake Erie	May	225	2,126,316	932	2,139,395	188,365	302,053	11,443	279,682	822,231	38.4	1,317,164	1,050,820	1,060,105	599,629	1,135,776
	5 mos.	225	6,006,489	4,300	6,082,126	691,296	1,516,009	59,062	1,048,982	3,517,944	57.8	2,564,182	1,918,613	2,225,785	905,811	2,596,977
Boston & Maine	May	1,959	2,888,726	534,582	3,954,002	530,088	665,863	61,704	1,510,459	2,960,741	74.9	993,261	684,413	494,634	327,274	630,077
	5 mos.	1,962	14,602,228	2,883,328	20,197,048	2,364,428	3,140,254	321,474	7,580,938	14,354,632	71.1	5,842,416	4,317,474	3,270,744	10,153	3,940,595
Burlington, Rock Island	May	255	87,056	15,124	112,986	16,818	13,523	4,302	51,264	94,635	83.8	18,351	11,067	—6,320	—30,872	—4,462
	5 mos.	255	435,409	69,004	542,402	78,415	75,783	24,466	242,470	461,412	85.1	80,990	43,799	—41,164	—133,537	—31,583
Cambria & Indiana	May	37	82,480	.....	82,583	8,315	43,299	374	6,535	63,565	76.97	19,018	—2,616	68,238	—1,589	85,038
	5 mos.	37	559,056	.....	559,550	30,371	206,954	1,945	57,591	327,122	58.46	232,428	52,250	418,705	279,885	503,547
Canadian Pacific Lines in Maine	May	233	133,500	11,451	156,442	51,956	43,955	9,633	68,165	181,381	115.9	—24,939	—35,065	—56,125	—33,881	—53,963
	5 mos.	233	1,159,600	66,693	1,286,477	129,723	279,072	47,770	441,189	936,415	72.8	350,062	298,670	189,416	23,642	200,115
Canadian Pacific Lines in Vermont	May	85	97,029	6,904	115,138	16,383	28,871	4,281	60,627	116,328	101.0	—1,190	—8,486	—31,567	—57,873	—31,567
	5 mos.	85	411,067	43,785	511,185	65,039	146,591	21,233	310,829	573,980	112.3	—62,795	—96,071	—196,460	—312,779	—196,460
Central of Georgia	May	1,926	1,173,674	106,987	1,470,245	200,723	306,742	55,664	580,540	1,228,520	83.6	241,725	154,572	115,204	30,644	181,301
	5 mos.	1,926	6,018,492	605,584	7,489,196	950,910	1,447,155	275,982	2,931,391	6,040,722	80.7	1,448,474	996,427	793,658	254,897	1,121,459
Central of New Jersey	May	681	2,363,330	375,747	2,916,526	224,287	523,558	50,171	1,160,663	2,075,694	71.2	840,832	462,156	286,157	52,635	404,584
	5 mos.	681	11,472,613	1,752,041	14,067,220	974,165	2,486,589	231,898	5,662,380	9,909,613	70.4	4,157,607	2,190,226	1,388,457	548,751	1,988,358
Central Vermont	May	455	525,521	26,838	595,630	80,499	86,932	16,231	230,787	435,947	73.2	159,683	135,827	91,513	3,987	117,838
	5 mos.	455	2,432,657	180,015	2,836,779	307,888	518,526	75,886	1,278,148	2,296,353	80.9	540,426	418,818	220,574	—49,274	351,391
Chesapeake & Ohio	May	3,106	10,130,606	332,231	10,933,718	1,137,515	1,921,006	191,460	2,502,715	6,140,273	56.2	4,793,445	3,439,738	3,397,424	4,337,645	4,085,384
	5 mos.	3,106	50,335,605	1,335,759	53,589,613	5,687,073	9,520,981	967,845	12,413,339	30,415,985	56.8	23,173,628	16,398,205	16,720,301	19,002,525	20,150,816
Chicago & Eastern Illinois	May	930	1,022,030	118,451	1,304,028	177,822	256,541	57,402	503,421	1,064,606	81.6	239,422	149,422	11,900	21,977	63,564
	5 mos.	930	5,602,793	589,805	6,995,087	759,752	1,162,153	292,318	2,619,471	5,181,053	74.1	1,814,034	1,364,034	648,755	358,021	900,469
Chicago & Illinois Midland	May	131	252,389	1,246	261,884	32,122	69,797	16,978	69,817	207,462	79.2	54,422	33,980	33,615	68,154	47,239
	5 mos.	131	1,603,856	6,301	1,647,284	125,518	337,860	88,486	413,299	1,060,651	64.4	586,633	448,188	407,911	375,438	475,965
Chicago & North Western	May	8,400	5,710,051	928,430	7,415,436	1,770,018	2,044,786	189,573	2,925,842	7,281,677	98.2	133,759	—554,890	—665,613	—404,715	—252,509
	5 mos.	8,403	26,770,097	4,265,661	34,671,759	5,244,692	9,384,627	888,572	14,807,662	32,101,959	92.6	2,569,800	—879,453	—1,735,120	—1,729,390	331,892
Chicago, Burlington & Quincy	May	8,976	5,685,591	733,288	7,300,100	1,685,603	1,481,009	265,566	2,804,996	6,612,513	90.6	687,587	—39,607	—328,529	—144,050	74,030
	5 mos.	8,976	31,561,152	3,348,972	39,030,689	5,010,949	7,452,741	1,232,479	14,670,405	30,291,794	77.6	8,738,895	5,102,939	3,411,609	2,957,966	5,415,336
Chicago Great Western	May	1,505	1,346,398	38,755	1,474,894	235,677	256,180	58,974	562,197	1,167,016	79.1	307,878	213,464	8,530	205,870	53,487
	5 mos.	1,505	6,908,948	216,067	7,582,384	1,189,558	1,278,766	294,713	2,975,949	6,012,325	79.3	1,570,059	1,093,883	112,530	69,673	332,086
Chicago, Indianapolis & Louisville	May	575	665,175	60,877	827,421	90,092	199,820	28,270	335,357	697,449	84.3	129,972	83,940	—15,544	—50,975	21,422
	5 mos.	575	3,628,440	265,029	4,389,076	437,545	1,026,988	146,888	1,765,417	3,568,741	81.3	820,335	578,464	62,431	92,942	247,653
Chicago, Milwaukee, St. Paul & Pac.	May	11,115	7,092,329	601,985	8,660,724	1,896,151	1,808,612	238,832	3,317,415	7,595,552	87.7	1,065,172	374,172	21,793	—310,265	478,137
	5 mos.	11,115	35,458,943	2,957,185	42,690,714	6,062,535	8,861,203	1,087,883	17,079,986	34,862,821	81.7	7,827,893	4,239,538	2,361,494	1,806,389	4,621,718

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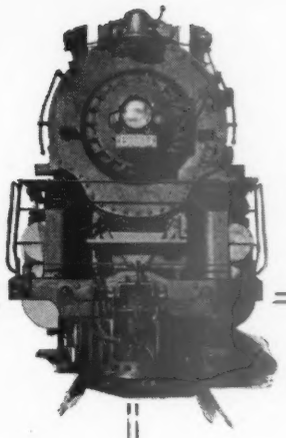
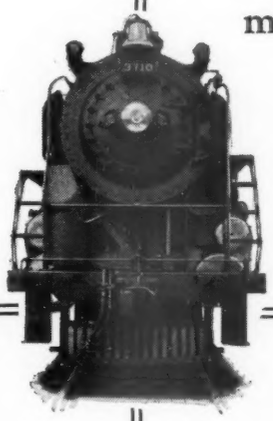
MODERN LOCOMOTIVES



combine . . .

high boiler pressure ◆ ◆ ◆ high superheat ◆ ◆ ◆ generous boiler proportion ◆ ◆ ◆ large grate area proper steam distribution ◆ ◆ ◆ light reciprocating and rotating weight ◆ ◆ ◆ modern power producing auxiliaries, into a harmonious design that reduces the cost of operation and maintenance and yields greater net returns.



LIMA LOCOMOTIVE WORKS — LIMA LOCOMOTIVE WORKS INCORPORATED — INCORPORATED, LIMA, OHIO

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1937—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures	Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depreciation 1937	After depreciation 1936	Before depreciation
Chicago, Rock Island & Pacific	May	7,516	$4,774,904	$550,985	$5,849,660	$1,202,687	$1,384,435	$238,543	$2,554,121	$5,721,509	97.8	$128,151	—$387,678	—$688,339	—$444,614	—$351,122
	5 mos.	7,526	24,364,260	3,086,893	30,046,561	4,320,048	6,385,311	1,117,975	12,982,772	26,709,638	88.9	3,336,923	765,515	—670,350	—1,924,142	1,021,628
Chicago, Rock Island & Gulf	May	626	252,111	33,114	392,450	48,159	32,282	18,251	139,045	265,590	67.7	126,860	101,101	34,510	—21,050	38,084
	5 mos.	626	1,273,281	159,865	1,887,731	259,934	185,302	90,322	674,408	1,339,960	71.0	547,771	420,691	93,003	44,580	111,464
Chicago, St. Paul, Minn. & Omaha	May	1,648	1,190,623	117,860	1,411,255	301,331	243,609	34,686	650,770	1,309,743	92.8	101,512	—6,288	—103,320	2,444	—53,884
	5 mos.	1,648	5,594,577	620,478	6,684,083	744,814	1,383,754	177,333	3,524,475	6,230,973	93.2	453,110	—109,794	—631,517	—449,781	—384,500
Clinchfield Railroad	May	308	569,411	4,646	580,670	46,307	117,157	18,675	107,989	305,331	52.6	275,339	228,280	261,097	155,989	295,605
	5 mos.	308	3,004,670	20,827	3,056,803	211,677	585,242	93,899	572,178	1,537,563	50.3	1,519,240	1,283,539	1,443,130	1,068,085	1,624,954
Colorado & Southern	May	798	518,677	29,453	604,690	75,693	122,300	14,559	234,510	479,623	79.3	125,067	58,392	32,319	7,940	63,607
	5 mos.	893	2,628,843	148,189	3,059,030	282,046	620,773	68,526	1,246,883	2,392,625	78.2	666,405	329,864	213,216	46,632	369,588
Ft. Worth & Denver City	May	902	497,962	45,704	515,110	53,253	89,898	19,061	182,491	379,166	73.6	135,944	97,979	56,177	—11,659	73,313
	5 mos.	902	2,350,342	227,515	2,515,601	231,521	447,839	87,119	854,468	1,791,953	71.2	723,648	537,036	367,351	288,480	453,116
Columbus & Greenville	May	167	93,738	8,045	107,621	23,658	11,829	4,951	37,936	88,808	82.5	18,813	14,013	8,469	4,669	11,320
	5 mos.	167	477,923	39,639	548,062	112,378	75,222	21,147	188,036	449,598	82.0	98,464	64,617	46,291	3,381	60,529
Delaware & Hudson	May	830	2,148,392	70,152	2,302,679	331,041	494,915	45,404	780,742	1,782,662	77.4	520,017	360,653	347,358	356,844	435,710
	5 mos.	830	10,464,355	439,345	11,320,073	1,252,899	2,451,379	230,421	3,985,004	8,608,774	76.0	2,711,299	1,912,324	1,876,599	940,791	2,320,191
Delaware, Lackawanna & Western	May	984	3,521,636	573,112	4,562,192	442,434	744,090	122,600	1,897,010	3,375,037	74.0	1,187,155	712,155	678,811	503,676	888,396
	5 mos.	984	16,838,458	2,827,962	22,002,938	1,514,531	3,859,101	580,311	9,567,898	16,448,204	74.8	5,554,734	3,364,734	3,295,313	2,162,088	4,347,549
Denver & Rio Grande Western	May	2,576	1,842,772	95,481	2,046,167	643,252	637,319	60,475	737,937	2,160,278	105.6	—114,111	—332,660	—382,872	—171,941	—287,742
	5 mos.	2,576	9,188,636	530,187	10,226,912	1,887,391	3,098,581	293,812	3,840,766	9,583,576	93.7	643,336	—415,875	—581,570	126,145	—103,968
Denver & Salt Lake	May	232	144,474	5,595	159,630	39,709	39,465	2,155	49,910	130,026	81.5	29,604	4,994	54,525	—3,846	52,756
	5 mos.	232	1,051,695	33,931	1,132,409	154,156	267,188	12,189	325,412	786,560	69.5	345,849	223,071	403,022	376,581	445,003
Detroit & Mackinac	May	242	70,168	2,258	79,625	18,507	15,962	1,154	25,471	64,076	81.3	14,919	11,278	5,196	4,350	7,853
	5 mos.	242	302,065	15,267	347,160	52,489	66,327	5,033	126,085	267,958	77.2	79,202	64,191	38,117	—7,140	51,482
Detroit & Toledo Shore Line	May	50	278,470	.....	280,776	29,448	23,756	8,064	74,320	143,645	51.2	137,131	108,947	59,002	74,928	65,138
	5 mos.	50	1,795,929	.....	1,809,176	123,746	114,943	40,576	423,303	742,323	41.0	1,066,853	870,217	571,278	564,552	601,130
Detroit, Toledo & Ironton	May	472	584,119	273	613,917	75,160	83,090	11,612	140,253	330,235	53.8	283,682	227,438	157,997	195,203	178,885
	5 mos.	472	3,608,093	1,103	3,739,044	388,151	420,393	58,383	754,941	1,720,596	46.0	2,018,448	1,644,360	1,323,735	1,332,011	1,428,259
Duluth, Missabe & Northern	May	539	3,791,601	2,227	4,344,811	293,682	257,236	4,623	580,738	1,184,047	27.3	3,160,764	2,897,540	2,894,822	1,214,313	2,959,911
	5 mos.	539	5,883,885	11,759	6,784,243	800,193	1,270,994	22,002	1,438,616	3,769,360	55.6	3,014,883	1,667,057	1,654,641	—497,615	1,981,082
Duluth, Winnipeg & Pacific	May	178	103,809	1,982	108,389	26,953	16,980	2,100	42,377	92,658	85.5	15,731	6,856	—5,867	—15,616	—2,996
	5 mos.	178	592,913	9,029	618,205	97,190	94,355	10,024	251,113	474,754	76.8	143,451	96,539	16,305	—7,832	30,912
Elgin, Joliet & Eastern	May	434	1,657,408	.....	1,916,554	182,351	399,863	15,016	684,811	1,325,874	69.2	590,680	443,984	336,543	287,411	411,490
	5 mos.	434	8,650,708	21	9,850,405	752,651	2,055,952	74,398	3,442,644	6,585,176	66.9	3,265,229	2,520,938	1,916,090	1,601,504	2,285,668
Erie	May	2,284	6,441,015	434,059	7,466,552	674,177	1,408,524	181,040	2,619,155	5,187,652	69.5	2,278,900	1,724,439	1,411,663	1,277,924	1,728,840
	5 mos.	2,284	31,709,589	2,073,587	36,394,001	2,724,736	6,908,306	873,962	13,004,084	25,041,369	68.8	11,352,632	8,620,313	7,141,826	5,885,851	8,730,323
New Jersey & New York	May	45	18,101	44,445	64,672	4,944	17,615	562	45,785	70,776	109.4	—6,104	—13,175	—27,951	—25,059	—27,940
	5 mos.	45	83,440	225,031	318,670	23,306	78,109	2,535	237,260	349,698	109.7	—31,028	—66,502	—138,057	—128,501	—138,002
New York, Susque & Western	May	225	278,952	24,943	315,360	22,410	31,962	4,547	121,309	192,570	61.1	122,790	91,184	48,858	25,601	55,282
	5 mos.	225	1,379,441	117,155	1,558,149	119,251	155,971	22,666	618,327	977,546	62.7	580,603	422,123	230,783	211,232	257,981
Florida East Coast	May	684	457,822	132,192	666,477	98,075	137,046	22,080	219,616	526,506	79.0	139,971	61,049	3,463	111,224	42,280
	5 mos.	684	3,001,553	1,870,071	5,409,684	475,294	750,268	119,465	1,651,428	3,351,429	62.0	2,058,255	1,645,413	1,338,080	1,154,504	1,532,149
Fort Smith & Western	May	249	58,694	906	62,762	17,239	9,294	6,600	21,475	58,755	93.6	4,007	2,507	—5,558	—12,310	—4,994
	5 mos.	249	324,117	4,252	344,887	83,092	43,369	31,553	112,526	291,359	84.5	53,528	46,028	4,668	—551	7,496
Georgia Railroad	May	329	266,783	13,534	309,977	33,707	61,705	19,415	130,872	259,641	83.8	50,336	35,238	42,993	38,880	53,816
	5 mos.	329	1,406,562	69,140	1,613,556	145,696	294,771	94,057	652,240	1,256,865	77.9	356,691	282,042	311,061	222,512	365,823
Georgia & Florida	May	407	84,110	2,345	90,503	25,017	18,926	8,594	35,784	94,273	104.2	—3,770	—11,555	—13,434	—13,945	—8,290
	5 mos.	407	501,386	11,598	534,207	120,858	90,364	43,067	196,020	479,756	89.8	54,451	15,464	—4,712	—37,749	21,352
Grand Trunk Western	May	1,032	2,018,717	75,424	2,237,078	288,834	394,285	40,864	836,188	1,659,896	74.2	577,182	446,981	317,095	540,786	401,297
	5 mos.	1,032	9,795,467	379,927	10,972,529	1,156,620	1,938,672	190,985	4,197,028	7,937,596	72.3	3,034,933	2,378,909	1,602,047	1,833,016	2,026,564
Canadian Nat'l Lines in New Eng.	May	172	117,224	3,138	129,347	26,331	22,101	2,653	60,013	120,060	92.8	9,287	—5,654	—35,734	—97,911	—32,891
	5 mos.	172	528,245	27,455	609,708	107,534	109,201	12,101	323,415	597,375	98.0	12,333	—62,371	—213,144	—329,480	—198,737
Great Northern	May	8,093	7,691,116	375,271	8,849,060	944,022	1,294,384	211,977	2,466,394	5,190,053	58.7	3,659,007	2,853,923	2,753,689	2,200,179	3,056,045
	5 mos.	8,093	27,499,187	1,744,974	32,087,613	3,535,095	6,245,876	934,004	11,818,805	23,879,340	74.4	8,208,273	5,258,173	4,934,994	4,238,262	6,443,969

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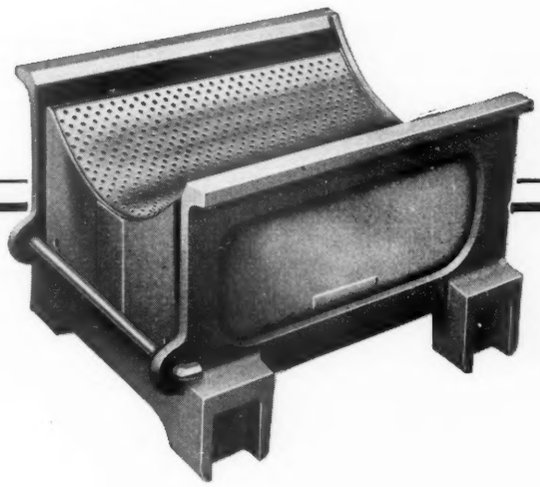
LUBRICATION
is a Major Problem



When the Franklin Automatic Driving Box Lubricator was first introduced, driving axle lubrication difficulties vanished.

Modifications in lubricator design suited to advances in locomotive design have been made, but the fundamental principle of grease reaching the axle through a perforated plate remains unchanged.

Assurance of proper lubrication can be had only when this perforated plate is properly designed and properly made.

These perforated plates, made for Franklin Driving Box Lubricators by the Franklin Railway Supply Company, Inc., are your assurance of properly lubricated, trouble-free driving journals.

When the cost of lubricator plates for a year's service on a locomotive is matched against the cost of one detention due to faulty lubrication the cost of Franklin lubricator plates becomes insignificant.

When maintenance is required, a replacement part assumes importance equal to that of the device itself and should be purchased with equal care. Use only genuine Franklin repair parts in Franklin equipment.

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1937—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures	Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depreciation 1937	1936	Before depreciation
Green Bay & Western	May	234	$135,938	$483	$141,723	$37,819	$16,490	$6,061	$46,658	$110,775	78.1	$30,948	$18,953	$10,500	$2,087	$15,241
	5 mos.	234	669,794	3,026	694,925	151,834	88,980	31,807	234,748	527,277	75.8	167,648	115,211	90,540	71,543	114,447
Gulf & Ship Island	May	259	106,384	7,184	134,259	23,526	17,220	3,259	55,256	105,538	78.6	28,721	10,943	1,675	—2,471	5,306
	5 mos.	259	570,726	42,630	697,174	103,810	83,072	16,122	319,571	553,469	79.4	143,705	54,838	4,326	—8,350	24,628
Gulf, Mobile & Northern	May	936	621,646	27,275	673,904	78,917	107,289	38,831	179,208	434,225	64.43	239,679	177,679	111,288	112,458	134,068
	5 mos.	936	2,995,585	126,638	3,242,784	387,148	458,416	188,747	853,487	2,049,375	63.20	1,193,409	896,509	571,608	468,357	665,943
Illinois Central	May	4,957	6,501,374	761,000	8,296,191	930,258	1,929,854	220,723	3,232,629	6,732,909	81.2	1,563,282	850,255	559,504	725,104	1,076,189
	5 mos.	4,962	33,517,436	3,966,609	41,109,916	4,079,690	8,725,216	1,094,392	16,607,650	32,676,710	79.5	8,433,206	4,833,333	3,730,836	4,503,293	6,358,152
Yazoo & Mississippi Valley	May	1,619	1,076,612	78,927	1,278,730	95,219	228,211	35,562	487,032	904,976	70.8	373,754	221,555	148,394	206,039	187,862
	5 mos.	1,619	5,761,066	376,271	6,595,449	545,389	1,013,834	177,050	2,464,734	4,501,433	68.3	2,094,016	1,336,074	968,622	444,544	1,172,404
Illinois Central System	May	6,576	7,577,986	839,927	9,574,921	1,025,477	2,158,065	256,285	3,719,661	7,637,885	79.8	1,937,036	1,069,744	717,898	940,343	1,274,051
	5 mos.	6,582	39,278,502	4,342,880	47,705,365	4,625,079	9,739,050	1,271,442	19,072,384	37,178,143	77.9	10,527,222	6,159,086	4,747,758	4,988,937	7,578,856
Illinois Terminal	May	504	362,597	75,983	481,513	59,099	72,378	16,380	165,244	334,345	69.44	147,168	86,251	62,015	123,731	80,825
	5 mos.	504	2,055,776	362,618	2,615,151	244,164	375,498	80,898	853,246	1,652,935	63.21	962,216	732,131	605,710	629,488	699,675
Kansas City Southern	May	878	1,015,002	18,748	1,150,598	112,844	158,834	50,198	332,100	722,128	62.8	428,470	340,470	272,703	296,383	307,603
	5 mos.	878	5,067,486	84,926	5,696,395	590,685	838,078	250,140	1,703,355	3,728,430	65.5	1,967,965	1,439,965	1,161,146	1,163,745	1,327,676
Kansas, Oklahoma & Gulf	May	326	185,863	547	189,273	29,111	12,715	8,672	44,845	94,688	50.0	94,585	74,005	53,463	51,847	55,557
	5 mos.	326	898,439	2,727	914,228	104,167	74,965	44,138	210,402	469,309	51.3	444,919	345,561	258,980	314,772	269,446
Lake Superior & Ishpeming	May	156	446,562	155	528,198	42,258	23,201	687	71,832	144,517	27.4	383,681	291,041	291,615	187,129	306,574
	5 mos.	156	787,372	655	919,847	127,033	135,619	3,485	194,116	492,866	53.6	426,981	257,237	260,250	—46,016	328,137
Lehigh & Hudson River	May	96	140,282	93	140,973	18,302	24,830	3,819	46,879	101,340	71.9	39,633	26,525	14,830	20,476	18,506
	5 mos.	96	705,866	477	709,745	64,265	115,069	19,750	242,765	480,146	67.7	229,599	157,444	94,613	62,127	112,986
Lehigh & New England	May	215	372,459	212	375,278	36,042	70,138	6,229	116,969	244,916	65.3	130,362	99,544	103,314	102,709	123,866
	5 mos.	215	1,690,804	1,126	1,703,498	153,213	346,061	32,932	598,936	1,211,867	71.1	491,631	376,090	394,252	353,632	491,990
Lehigh Valley	May	1,322	3,774,535	211,359	4,247,539	361,775	931,146	119,820	1,777,747	3,355,907	79.0	891,632	660,973	415,288	705,615	602,645
	5 mos.	1,322	19,484,859	1,078,082	21,841,979	1,431,882	4,318,522	573,471	9,207,557	16,376,481	75.0	5,464,498	4,025,707	2,925,358	2,711,368	3,872,187
Louisiana & Arkansas	May	606	469,985	8,736	496,716	61,019	73,366	34,207	139,797	331,993	66.8	164,723	132,921	103,743	119,172	118,706
	5 mos.	606	2,295,596	42,851	2,425,160	327,829	343,706	154,885	707,239	1,644,677	67.8	780,483	605,695	477,106	540,880	553,759
Louisiana, Arkansas & Texas	May	255	95,742	146	101,698	15,789	11,746	4,770	35,055	72,073	70.9	29,625	24,100	7,818	5,644	8,715
	5 mos.	255	504,059	933	527,846	103,965	53,338	23,729	197,156	405,797	76.9	122,049	96,424	10,848	22,467	14,931
Louisville & Nashville	May	4,940	6,890,856	541,574	8,019,480	824,697	1,730,021	189,019	2,664,994	5,736,680	71.5	2,282,800	1,528,953	1,566,408	1,488,891	1,909,903
	5 mos.	4,942	32,308,422	2,789,594	37,809,407	3,907,818	8,345,854	952,712	13,162,840	27,989,073	74.0	9,820,334	6,438,675	6,943,516	6,606,687	8,681,721
Maine Central	May	1,009	896,028	74,806	1,063,241	171,998	180,479	12,524	344,958	748,624	70.4	314,617	244,670	195,888	175,224	239,308
	5 mos.	1,009	4,847,793	370,095	5,582,930	781,894	900,250	61,008	1,873,967	3,822,574	68.5	1,760,356	1,409,679	1,077,818	359,207	1,293,774
Midland Valley	May	351	94,849	9	97,604	17,744	17,309	2,391	27,434	71,089	72.8	26,515	17,415	13,011	15,737	15,155
	5 mos.	351	558,215	52	569,796	72,353	55,909	13,045	149,914	323,301	56.7	246,495	198,668	158,563	187,082	169,271
Minneapolis & St. Louis	May	1,530	627,289	8,748	670,853	107,857	117,025	40,232	281,715	586,275	87.4	84,578	36,458	984	77,121	27,446
	5 mos.	1,530	2,995,760	54,224	3,223,933	440,433	580,408	209,638	1,469,519	2,891,197	89.7	332,736	124,868	—121,596	40,469	8,905
Minneapolis, St. Paul & S.S. Marie	May	4,301	2,137,387	86,636	2,432,287	401,008	418,360	60,821	915,503	1,901,795	78.2	530,492	344,836	210,115	342,052	308,496
	5 mos.	4,301	9,306,517	431,572	10,550,882	1,409,114	2,057,608	300,864	4,630,127	8,916,744	84.5	1,634,138	945,544	310,016	—45,335	820,570
Duluth, South Shore & Atlantic	May	549	260,937	12,144	302,688	33,639	50,826	4,679	99,366	199,122	65.8	103,566	89,194	80,199	129,069	87,418
	5 mos.	549	1,011,975	68,884	1,167,773	157,190	204,108	22,454	448,188	870,793	74.6	296,980	231,197	181,136	135,092	217,482
Spokane International	May	163	58,910	1,143	65,377	19,910	9,325	2,409	22,593	58,375	89.3	7,002	1,928	—2,554	3,785	—917
	5 mos.	163	283,224	6,981	318,876	72,666	36,260	10,539	116,827	263,785	82.7	55,091	30,436	11,989	10,408	20,174
Mississippi Central	May	150	65,704	2,170	70,598	19,647	11,954	7,316	26,179	70,368	99.7	230	—4,564	—8,784	13,611	—6,557
	5 mos.	150	352,415	10,358	374,901	91,423	58,693	34,416	109,249	320,103	85.4	54,798	30,623	6,202	48,733	17,342
Missouri-Arkansas	May	364	91,436	1,079	98,369	22,667	11,411	5,935	34,285	78,324	79.6	20,045	15,995	5,670	11,181	6,712
	5 mos.	364	430,961	5,786	464,618	123,560	55,871	29,118	170,039	399,906	86.1	64,712	45,574	—3,212	31,574	1,397
Missouri-Illinois	May	205	117,314	743	120,171	28,049	14,986	2,898	37,930	89,845	74.8	30,326	23,363	9,692	9,667	12,719
	5 mos.	205	584,160	3,071	596,796	118,189	62,356	13,687	184,440	407,930	68.4	188,866	155,724	84,677	12,015	99,826
Missouri-Kansas-Texas Line	May	3,293	2,108,741	186,587	2,543,451	350,619	429,754	123,820	961,983	2,014,861	79.2	528,590	370,283	152,182	129,104	251,030
	5 mos.	3,293	10,333,514	903,777	12,411,470	1,487,129	1,969,186	608,020	4,724,599	9,529,997	76.8	2,881,473	2,223,740	1,152,278	592,565	1,645,490
Missouri Pacific	May	7,171	5,963,093	425,694	7,062,429	1,118,677	1,393,945	239,181	2,672,018	5,760,990	81.6	1,301,439	808,168	371,817	311,320	659,866
	5 mos.	7,171	32,762,849	2,244,344	38,065,159	4,891,879	7,292,074	1,235,783	14,261,094	29,289,808	76.9	8,775,351	6,274,338	3,768,627	2,732,244	5,511,369

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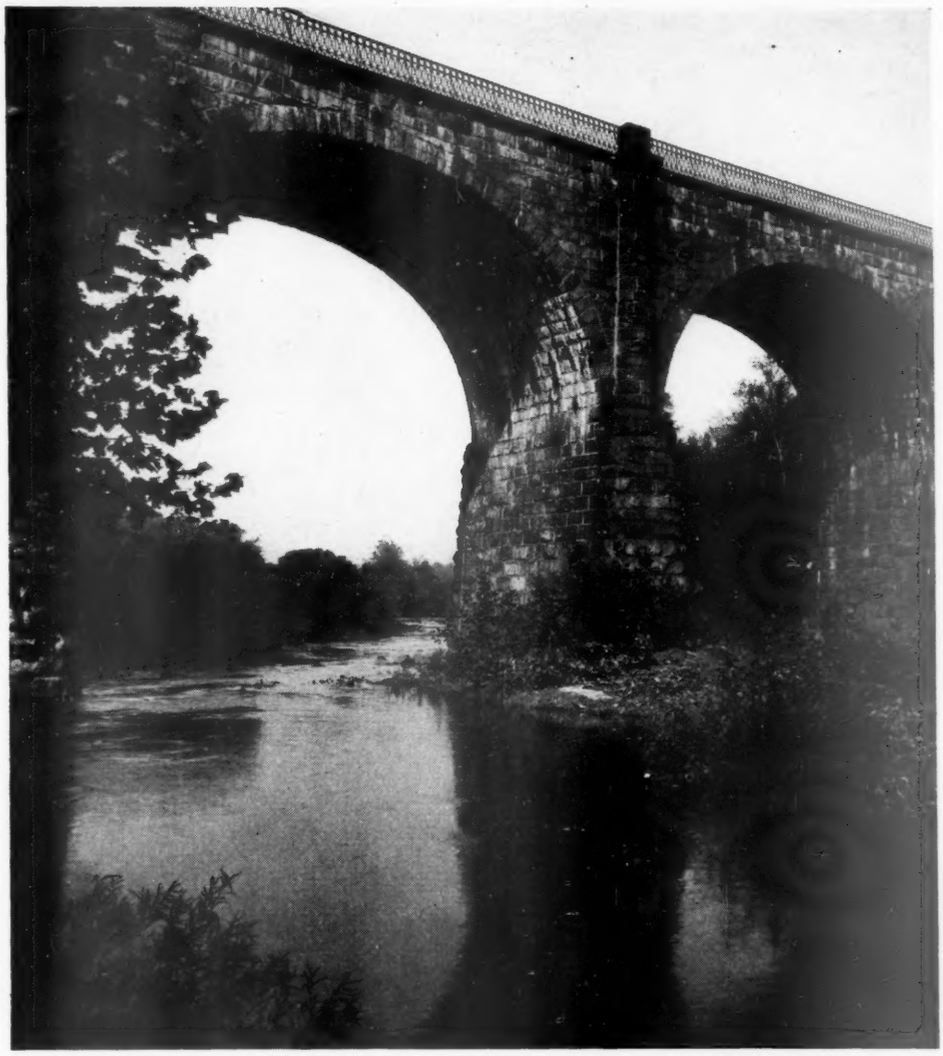
NO. 22 OF A SERIES OF FAMOUS ARCHES OF THE WORLD



THOMAS VIADUCT

The oldest railroad viaduct in the world is the stone arch Thomas Viaduct on the Baltimore and Ohio that spans the Patapsco River between Relay and Elkridge, Maryland. It was placed in service one hundred and two years ago, on July 4, 1835 and at the time was designed for use by six-ton "Grasshoppers." Today the heaviest of modern engines can and do use this viaduct because of its soundness of design and rugged construction. » » » The American Arch Company was a pioneer in that other type arch—the Security Sectional Arch—so essential to economy and performance in railroading. The Security Arch development was so fundamentally sound that today it is still standard on American railroads.

* * *

THERE'S MORE TO SECURITY ARCHES THAN JUST BRICK

HARBISON-WALKER REFRACTORIES CO.

Refractory Specialists

AMERICAN ARCH CO.
INCORPORATED

Locomotive Combustion Specialists » » »

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1937—CONTINUED

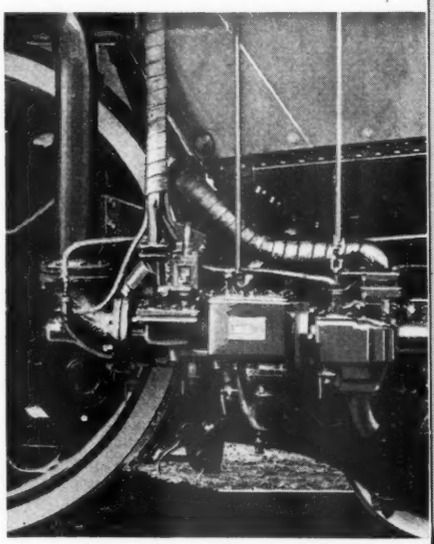
Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depreciation 1937	After depreciation 1936	Before depreciation
Gulf Coast Lines	May	1,763	$1,238,370	$41,224	$1,347,899	$191,097	$199,804	$46,783	$393,183	$883,423	65.54	$464,476	$390,281	$262,129	$69,065	$297,523
	5 mos.	1,769	7,763,777	208,674	8,302,473	911,482	1,016,760	233,296	2,140,995	4,554,748	54.86	3,747,725	3,372,618	2,467,285	872,189	2,643,725
International Great Northern	May	1,154	857,540	71,925	1,042,177	155,480	196,641	32,960	448,419	890,048	85.40	152,129	92,618	—22,654	—11,661	9,706
	5 mos.	1,154	4,497,045	425,640	5,465,581	737,549	1,015,747	158,626	2,342,992	4,556,586	83.37	908,995	607,132	—781	—14,476	159,739
Mobile & Ohio	May	1,194	942,415	35,031	1,053,163	120,931	218,900	43,183	383,087	813,493	77.2	239,670	178,340	106,743	50,050	157,050
	5 mos.	1,198	4,618,151	148,823	5,073,114	599,175	918,946	214,308	1,882,299	3,848,764	75.9	1,224,350	927,571	603,318	212,869	854,984
Monongahela	May	171	351,648	906	354,981	43,223	26,625	584	74,780	148,979	42.0	206,002	167,880	85,913	123,953	91,434
	5 mos.	171	1,929,424	4,302	1,950,925	210,706	149,646	2,356	424,280	803,974	41.2	1,146,951	968,151	556,302	609,613	583,857
Montour	May	56	233,827	135	234,274	18,794	42,713	1,092	46,578	115,687	49.4	118,587	83,751	113,105	67,240	126,167
	5 mos.	56	940,372	135	947,143	62,588	201,805	5,446	246,893	555,214	58.6	391,929	272,573	382,598	307,279	443,670
Nashville, Chatt. & St. Louis	May	1,117	977,763	85,123	1,194,312	154,931	276,757	61,887	485,418	1,041,224	87.2	153,088	71,121	45,129	49,237	87,307
	5 mos.	1,120	5,168,494	510,399	6,383,665	756,319	1,375,071	322,910	2,427,006	5,209,336	81.6	1,174,329	766,764	677,686	342,921	888,932
Nevada Northern	May	165	47,605	1,849	54,652	8,541	4,742	979	10,339	28,902	52.9	25,750	15,522	17,475	21,881	23,416
	5 mos.	165	245,818	8,239	279,961	43,163	20,125	4,877	56,844	146,873	52.5	133,088	88,764	95,488	77,047	125,230
New York Central	May	11,177	22,223,712	5,123,112	31,127,851	3,203,237	6,856,475	572,660	11,502,972	23,605,472	75.8	7,522,379	5,161,505	3,956,380	3,280,984	5,292,573
	5 mos.	11,211	113,446,959	25,470,000	155,829,496	15,095,806	32,548,089	2,785,975	58,182,255	116,174,847	74.6	39,654,649	27,777,680	21,345,947	15,448,569	28,015,921
Pittsburgh & Lake Erie	May	233	2,064,135	59,966	2,191,706	164,940	753,619	29,839	624,810	1,662,633	75.9	529,073	386,220	588,097	506,836	737,778
	5 mos.	233	9,727,148	289,178	10,337,434	748,953	3,924,930	139,598	3,185,975	8,437,830	81.6	1,899,604	1,119,514	2,000,520	1,686,217	2,723,841
New York, Chicago & St. Louis	May	1,704	3,279,610	69,790	3,469,101	385,612	506,664	125,556	1,191,709	2,341,141	67.5	1,127,960	850,591	572,564	667,278	708,480
	5 mos.	1,704	17,598,993	327,894	18,493,262	1,856,587	2,818,300	597,980	6,052,957	11,993,751	64.9	6,499,511	5,111,826	3,651,484	3,499,962	4,326,057
New York, New Haven & Hartford	May	2,038	4,020,592	2,147,250	6,897,294	1,097,096	1,211,606	141,926	2,726,194	5,608,375	81.3	1,288,979	788,979	161,441	421,495	446,453
	5 mos.	2,034	20,243,156	10,463,238	34,463,899	3,860,674	5,900,593	587,076	13,063,327	25,644,785	74.4	8,819,114	6,319,114	3,274,406	1,610,818	4,696,952
New York Connecting	May	20	227,544	.....	239,620	15,612	8,246	.....	29,895	54,949	22.9	184,671	147,001	119,873	102,367	119,873
	5 mos.	20	1,186,082	.....	1,245,069	58,040	38,384	.....	141,068	243,485	19.6	1,001,584	814,014	697,599	578,644	697,599
New York, Ontario & Western	May	576	521,981	28,868	599,815	63,569	134,241	8,729	273,908	504,916	84.2	94,899	42,911	12,864	129,541	36,287
	5 mos.	576	2,599,030	55,865	2,901,046	251,535	634,336	57,074	1,388,098	2,432,627	83.9	468,419	210,005	28,348	432,973	148,586
Norfolk & Western	May	2,202	7,502,757	170,294	7,909,850	835,985	1,497,447	138,828	1,727,598	4,435,664	56.1	3,474,186	2,243,716	2,583,716	2,471,680	2,984,721
	5 mos.	2,203	38,009,204	868,319	40,055,968	4,337,494	7,008,419	668,821	8,808,416	22,008,218	54.9	18,047,750	12,131,832	13,666,332	12,570,164	15,627,736
Norfolk Southern	May	834	362,047	7,088	387,422	82,206	56,062	23,742	149,367	324,287	83.7	63,135	28,602	5,237	1,470	16,185
	5 mos.	834	1,801,553	32,890	1,921,335	368,052	259,692	113,104	716,923	1,548,157	80.6	373,178	203,352	102,290	29,140	156,974
Northern Pacific	May	6,726	4,310,612	315,339	5,082,128	833,838	1,249,350	185,278	1,886,419	4,489,403	88.3	592,725	17,639	335,667	215,013	603,848
	5 mos.	6,726	21,168,921	1,582,913	24,931,934	2,838,010	5,934,356	829,002	9,965,839	21,270,917	85.3	3,661,017	813,349	2,574,902	909,835	3,916,767
Northwestern Pacific	May	351	227,688	77,879	331,702	50,236	53,824	5,156	169,377	293,045	88.3	38,657	23,715	17,548	—3,073	30,983
	5 mos.	351	1,031,136	325,986	1,487,594	263,616	265,520	21,876	809,965	1,432,661	96.3	54,933	—21,591	—64,178	—51,289	3,426
Oklahoma City-Ada-Atoka	May	132	44,637	491	47,546	14,973	2,762	762	11,409	32,016	67.3	15,530	12,297	5,573	12,994	5,580
	5 mos.	132	202,532	2,141	216,480	66,059	7,170	3,834	56,291	143,926	66.5	72,554	58,068	24,752	81,938	24,788
Pennsylvania	May	10,308	31,042,247	5,697,039	40,645,156	4,658,665	8,711,783	683,670	13,987,105	30,055,386	73.9	10,589,770	6,536,073	6,066,111	6,859,392	8,185,853
	5 mos.	10,308	148,530,023	29,234,882	194,834,929	21,090,901	43,069,355	3,345,652	68,935,986	146,670,510	75.3	48,164,419	30,521,914	28,765,731	28,320,802	39,057,851
Long Island	May	396	673,014	1,443,045	2,226,313	218,886	400,351	17,294	961,562	1,655,905	74.4	570,408	270,148	110,051	227,788	207,518
	5 mos.	396	2,940,047	6,589,284	10,000,355	1,101,219	2,072,715	86,864	4,877,335	8,463,592	84.6	1,536,763	441,781	—329,658	272,418	158,563
Pennsylvania-Reading Seashore Lines	May	412	276,647	213,208	512,076	77,830	81,322	15,260	274,145	476,552	93.1	35,524	—47,422	—133,352	—123,369	—117,005
	5 mos.	412	1,312,769	692,257	2,105,558	406,954	440,372	52,111	1,320,205	2,358,789	112.0	—253,231	—637,031	—1,013,112	—824,650	—931,273
Pere Marquette	May	2,115	2,465,783	71,721	2,696,316	354,601	585,027	67,424	970,425	2,078,049	77.1	618,267	431,503	333,462	473,658	546,888
	5 mos.	2,115	12,687,240	348,182	13,772,432	1,634,798	2,825,991	329,530	4,934,537	10,212,795	74.2	3,559,637	2,629,377	2,215,324	2,311,085	3,281,003
Pittsburg & Shawmut	May	100	21,734	264	22,522	14,573	13,640	1,392	10,945	44,609	198.0	—22,087	—23,760	18,131	—4,075	—13,964
	5 mos.	100	266,308	1,834	271,904	73,175	94,877	6,371	87,237	281,442	103.5	—9,538	—20,418	4,701	—2,979	26,106
Pittsburgh & West Virginia	May	138	349,151	.....	363,998	70,059	131,924	18,790	74,671	319,779	87.9	44,219	20,965	56,993	122,456	80,050
	5 mos.	138	1,735,067	6,440	1,826,013	278,212	466,382	94,058	369,891	1,327,905	72.7	498,108	363,169	529,857	564,222	639,913
Pittsburg, Shawmut & Northern	May	190	73,914	106	75,204	21,892	20,656	1,372	74,775	75,124	99.9	80	—3,282	—8,855	—10,595	—7,011
	5 mos.	190	438,495	162	445,508	78,227	101,991	7,128	160,149	379,537	85.2	65,971	48,399	14,551	16,335	23,866
Reading	May	1,452	4,232,001	308,623	4,784,092	402,556	864,242	74,348	1,850,894	3,423,733	71.6	1,360,359	943,782	991,019	1,252,363	1,248,455
	5 mos.	1,452	23,855,013	1,543,770	26,588,771	1,775,732	4,834,919	370,287	9,700,549	17,806,056	67.0	8,782,715	6,363,540	6,466,803	5,480,180	7,758,602
Richmond, Fredericksburg & Potomac	May	117	419,613	163,434	709,383	50,863	127,246	8,619	260,688	499,528	70.4	209,855	161,125	103,498	53,761	130,181
	5 mos.	117	2,001,305	1,295,543	4,038,072	279,953	653,201	46,824	1,524,379	2,783,827	68.9	1,254,245	947,373	631,225	232,882	761,569

Continued on next left-hand page

A Recent Improvement

The *Elesco* Exhaust Steam Injector

has been improved as to handling hot suction water. In its present state it will handle suction water at 105° F. with a satisfactory range.



THE SUPERHEATER COMPANY

Representative of American Throttle Company, Inc.

60 East 42d Street, New York
Peoples Gas Building, Chicago
Canada: The Superheater Co., Ltd., Montreal

A-1154

Tangential Steam Dryers Superheaters Feed Water Heaters Exhaust Steam Injectors Superheated Steam Pyrometers American Throttles

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1937—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depreciation 1937	After depreciation 1936	Before depreciation
Rutland	May	407	$223,963	$23,569	$310,936	$38,770	$57,389	$10,980	$143,210	$266,467	85.7	$44,469	$25,344	$26,557	$24,631	$37,886
	5 mos.	407	1,019,461	148,579	1,483,070	191,622	304,069	52,905	738,393	1,366,201	92.1	116,869	25,361	34,536	—54,524	91,186
St. Louis-San Francisco	May	4,926	3,203,914	306,396	3,876,320	594,645	895,548	116,852	1,512,459	3,294,795	85.0	581,525	220,328	244,454	261,626	506,065
	5 mos.	4,926	16,769,165	1,499,121	20,138,708	2,995,860	4,484,479	564,375	7,838,234	16,803,171	83.4	3,335,537	1,677,621	1,690,729	1,331,995	3,000,566
St. Louis, San Francisco & Texas	May	261	121,422	503	126,931	26,597	13,154	8,072	56,375	111,771	88.1	15,160	5,915	—26,199	—44,861	—26,097
	5 mos.	261	537,879	1,890	563,790	133,931	62,586	34,261	267,821	533,949	94.7	29,841	—12,877	—175,900	—273,558	—175,391
St. Louis Southwestern	May	1,749	1,738,539	24,987	1,847,446	360,920	304,268	75,590	576,195	1,395,532	75.5	451,914	347,737	169,711	276,214	219,592
	5 mos.	1,749	8,524,749	131,874	9,026,378	1,444,739	1,587,502	389,484	2,882,179	6,698,507	74.2	2,327,871	1,779,980	865,757	1,290,496	1,117,212
Seaboard Air Line	May	4,307	2,861,494	355,927	3,564,392	540,591	709,213	154,001	1,274,580	2,860,924	80.3	703,468	428,468	325,804	171,030	488,735
	5 mos.	4,307	15,186,435	2,850,127	19,978,702	2,503,616	3,544,216	812,817	6,942,143	14,844,691	74.3	5,134,011	3,684,011	2,843,624	1,126,490	3,638,771
Southern	May	6,639	6,574,187	773,373	8,079,691	1,015,560	1,572,390	147,875	2,839,805	5,888,859	72.9	2,190,832	1,676,963	1,313,251	1,308,584	1,573,592
	5 mos.	6,639	35,298,569	4,141,519	43,111,326	5,101,878	7,870,231	753,871	14,618,534	29,923,841	69.4	13,187,485	10,249,784	8,289,129	6,511,650	9,597,638
Alabama Great Southern	May	315	514,895	57,184	615,061	91,016	152,376	11,461	191,078	467,890	76.1	147,171	88,101	72,685	71,377	95,904
	5 mos.	315	2,649,722	263,175	3,124,299	434,183	691,034	58,675	938,927	2,229,193	71.4	895,106	635,260	547,342	303,263	663,604
Cinn. New Orleans & Texas Pacific	May	336	1,371,303	89,917	1,543,690	170,188	266,499	28,432	369,360	884,779	57.3	658,911	522,458	477,169	379,931	527,230
	5 mos.	336	6,309,737	617,686	7,393,011	929,692	1,361,287	129,737	1,830,449	4,527,156	61.2	2,865,855	2,286,973	2,135,470	1,853,394	2,385,688
Georgia, Southern & Florida	May	397	141,233	27,674	186,604	34,574	42,074	1,923	77,535	162,070	86.9	24,534	10,606	7,801	—11,471	14,589
	5 mos.	397	673,421	309,958	1,115,927	164,187	197,013	9,468	423,033	842,656	75.5	273,271	202,964	164,453	31,712	198,627
New Orleans & Northeastern	May	204	232,452	20,667	270,790	42,746	34,623	5,058	76,568	170,509	63.0	100,281	57,022	33,087	23,342	39,106
	5 mos.	204	1,164,786	103,231	1,356,638	174,866	175,739	27,069	388,599	820,982	60.5	535,656	347,300	258,358	81,191	288,518
Northern Alabama	May	100	55,432	1,662	59,111	11,414	1,717	1,391	19,851	35,736	60.5	23,375	17,103	5,669	5,222	5,717
	5 mos.	100	321,478	8,395	339,978	55,565	7,886	6,586	105,372	184,998	54.4	154,980	125,404	68,344	49,275	68,607
Southern Pacific	May	8,764	10,558,486	1,794,203	13,635,972	1,391,556	2,568,645	373,649	5,766,285	11,030,714	80.9	2,605,258	1,483,012	760,243	1,148,265	1,268,033
	5 mos.	8,770	54,662,337	8,776,394	69,192,465	6,802,792	12,147,917	1,712,705	28,428,391	53,708,298	77.6	15,484,167	10,141,224	6,931,642	5,321,618	9,420,974
Southern Pacific S. S. Lines	May	....	524,129	21,861	569,392	19,636	91,334	18,973	437,905	587,622	103.2	—18,230	—33,426	—33,603	—7,462	1,534
	5 mos.	....	3,067,633	105,946	3,303,109	92,446	458,464	88,785	2,418,598	3,155,586	95.5	147,523	72,204	11,730	—124,627	187,344
Texas & New Orleans	May	4,421	3,260,627	281,974	3,849,010	639,415	687,723	124,714	1,330,665	3,026,112	78.6	822,898	527,347	296,559	90,978	429,365
	5 mos.	4,427	17,052,615	1,412,701	19,908,255	2,953,616	3,400,515	612,155	6,556,937	14,762,281	74.2	5,145,974	3,662,536	2,532,589	1,289,737	3,197,894
Spokane, Portland & Seattle	May	946	656,572	43,605	757,689	91,129	98,606	9,373	260,379	488,935	64.5	268,754	209,616	142,822	123,544	158,358
	5 mos.	946	3,096,577	185,676	3,546,707	378,958	442,637	46,445	1,325,024	2,338,827	65.9	1,207,880	905,133	639,146	236,306	716,530
Tennessee Central	May	286	186,938	4,949	203,294	40,293	32,346	6,450	70,103	159,588	78.5	43,706	38,794	20,875	14,377	26,824
	5 mos.	286	978,993	24,352	1,062,401	192,243	161,677	31,062	365,444	800,555	75.4	261,846	227,735	138,548	151,116	168,273
Texas & Pacific	May	1,948	2,202,725	211,773	2,622,607	270,727	468,008	76,904	757,521	1,707,302	65.1	915,305	724,820	581,401	465,303	678,368
	5 mos.	1,948	10,554,730	1,038,116	12,525,553	1,281,164	2,239,894	395,675	3,772,497	8,382,163	66.9	4,143,390	3,197,301	2,531,628	2,004,782	3,018,115
Texas Mexican	May	162	145,004	437	159,554	21,014	19,219	3,206	44,972	96,982	60.8	62,572	55,468	44,089	66,089	45,932
	5 mos.	162	589,300	2,530	654,871	90,101	89,795	17,458	200,884	436,925	66.7	217,946	182,790	140,737	138,536	149,952
Toledo, Peoria & Western	May	239	180,089	.....	183,126	69,693	17,380	17,758	46,663	161,529	88.2	21,597	16,168	863	36,144	10,906
	5 mos.	239	938,751	3	951,996	219,207	70,659	88,052	238,410	666,348	70.0	285,648	205,534	121,748	145,357	165,619
Union Pacific System	May	9,911	9,944,471	1,343,398	12,420,781	1,857,588	2,596,298	441,302	4,203,372	9,859,038	79.4	2,561,743	1,179,701	569,133	349,161	1,128,804
	5 mos.	9,916	51,045,356	5,992,897	62,465,680	7,704,776	13,440,918	1,811,282	22,186,611	49,095,454	78.6	13,370,226	6,862,652	4,141,274	3,167,044	6,932,882
Utah	May	111	37,952	.....	37,989	10,793	22,200	343	11,591	49,023	129.0	—11,034	—15,796	—10,740	—3,398	—468
	5 mos.	111	576,086	.....	576,789	87,512	199,656	2,048	153,503	465,133	80.6	111,656	52,141	35,472	75,903	85,306
Virginian	May	618	1,477,829	3,747	1,541,529	125,708	337,775	18,334	253,290	767,549	49.8	773,980	579,516	660,880	665,976	755,620
	5 mos.	618	7,610,899	17,383	7,952,989	575,684	1,440,029	104,220	1,290,669	3,558,384	44.7	4,394,605	3,357,605	3,741,638	3,375,176	4,216,061
Wabash	May	2,433	3,241,688	194,328	3,693,215	530,143	641,615	161,637	1,444,789	2,941,352	79.6	751,863	524,000	238,015	403,240	417,708
	5 mos.	2,441	17,680,636	972,132	19,919,295	2,209,108	3,772,107	752,443	7,401,114	14,898,690	74.8	5,020,605	3,897,640	2,386,228	2,131,902	3,275,483
Ann Arbor	May	293	308,124	2,381	320,017	31,816	74,310	12,805	142,513	273,505	85.5	46,512	26,572	12,185	11,073	32,113
	5 mos.	293	1,672,072	13,083	1,726,416	130,030	412,716	61,058	727,367	1,388,102	80.4	338,314	238,060	155,859	121,000	255,513
Western Maryland	May	882	1,369,816	5,764	1,411,639	223,927	310,996	40,472	368,956	993,755	70.4	417,884	297,884	315,824	298,039	413,944
	5 mos.	882	7,490,943	31,276	7,717,424	990,217	1,634,672	200,698	1,906,515	4,998,855	64.8	2,718,569	2,123,569	2,175,425	1,794,087	2,644,923
Western Pacific	May	1,207	1,324,375	32,945	1,388,631	470,712	315,126	60,105	545,916	1,484,326	106.9	—95,695	—135,976	—210,617	—149,599	—157,645
	5 mos.	1,207	5,980,020	154,662	6,295,177	1,424,017	1,491,061	286,467	2,683,668	6,143,953	97.6	151,224	—263,055	—615,802	—510,344	—349,320
Wheeling & Lake Erie	May	512	1,429,300	1,961	1,531,750	178,478	323,834	34,438	461,803	1,030,137	67.3	501,613	323,695	419,437	150,505	495,339
	5 mos.	512	6,639,852	9,169	6,977,902	730,193	1,487,946	164,506	2,067,313	4,600,606	65.9	2,377,296	1,520,723	2,046,793	861,794	2,411,698